APPENDIX A

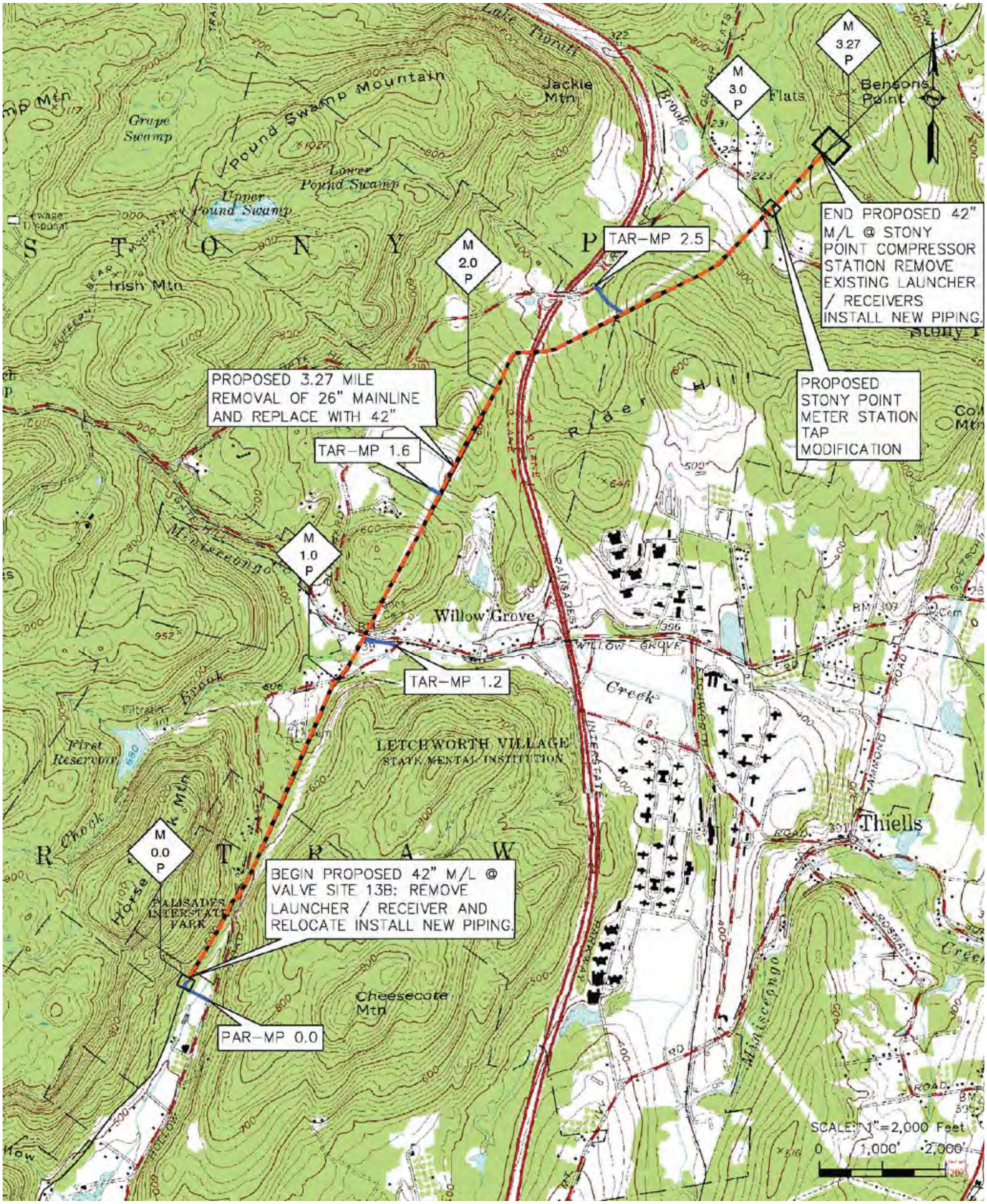
DISTRIBUTION LIST

Provided in Volume II – CD Only

APPENDIX B

FACILITY LOCATION MAPS AND TYPICAL RIGHT-OF-WAY CONFIGURATIONS

FACILITY LOCATION MAPS

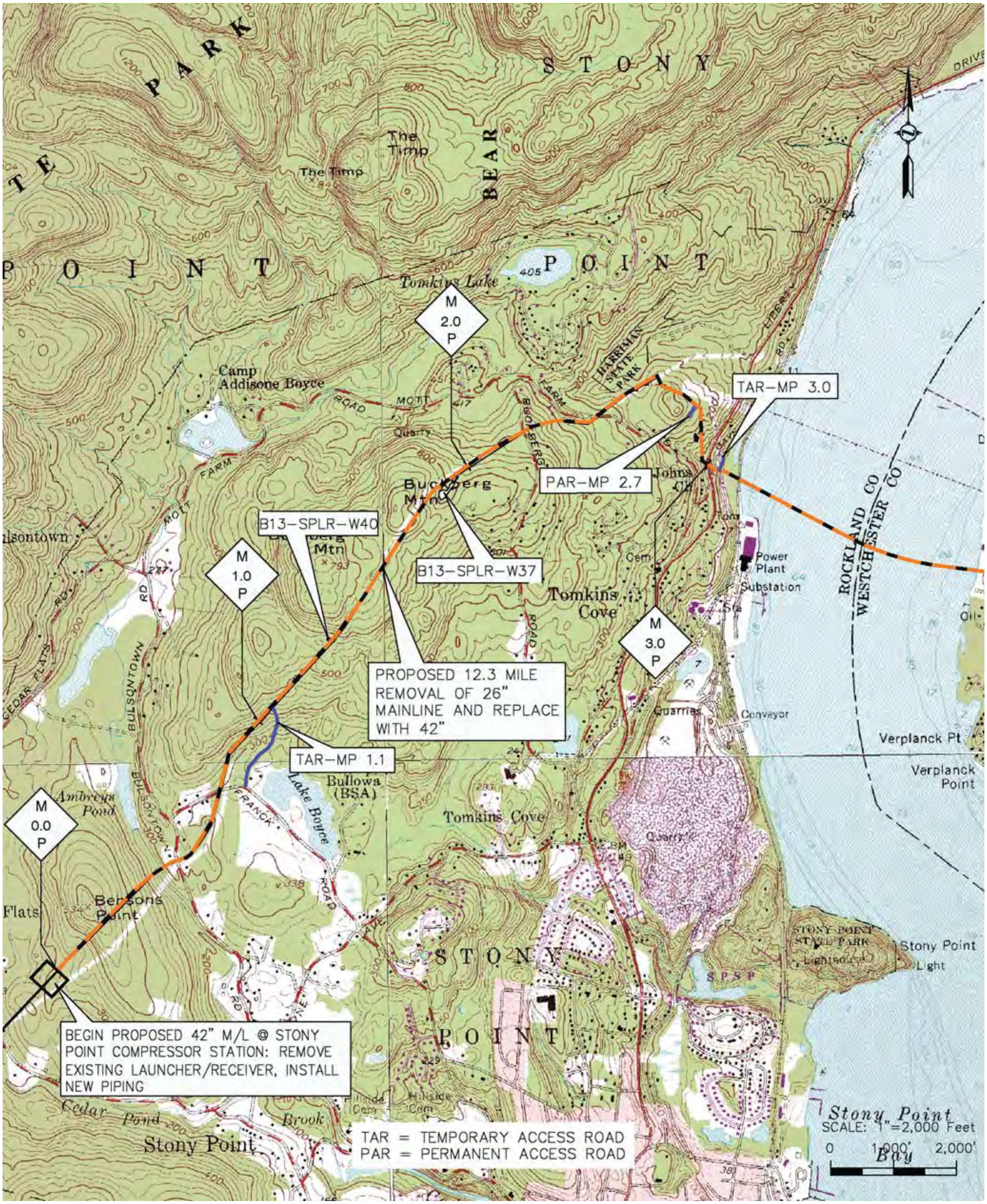


Appendix B

AIM Project

Facility Location Maps

Haverstraw to Stony Point Take-up and Relay



Appendix B

AIM Project

Facility Location Maps

Stony Point to Yorktown Take-up and Relay

Page 1 of 5

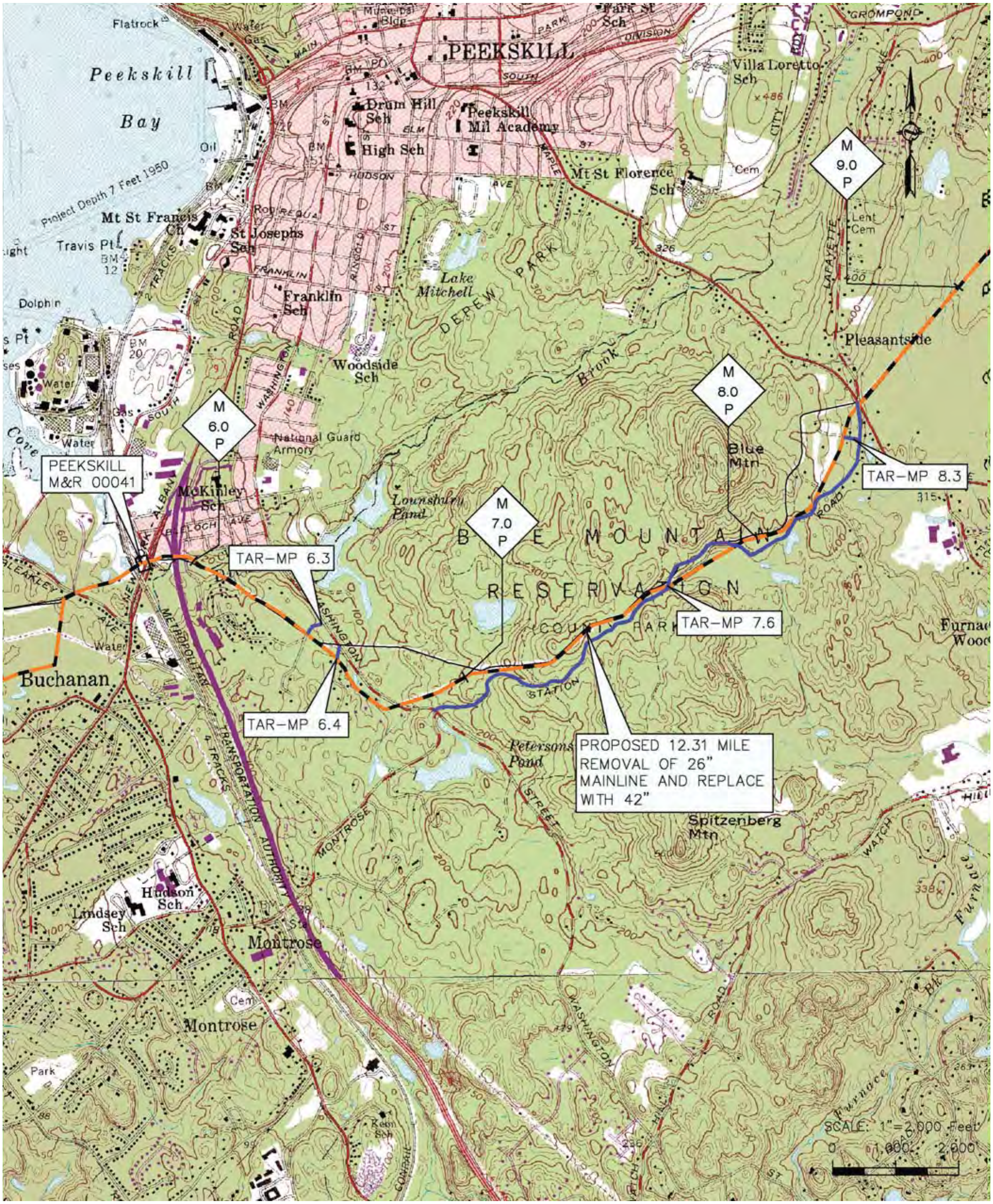
Appendix B

AIM Project

Facility Location Maps

Stony Point to Yorktown Take-up and Relay

Page 2 of 5



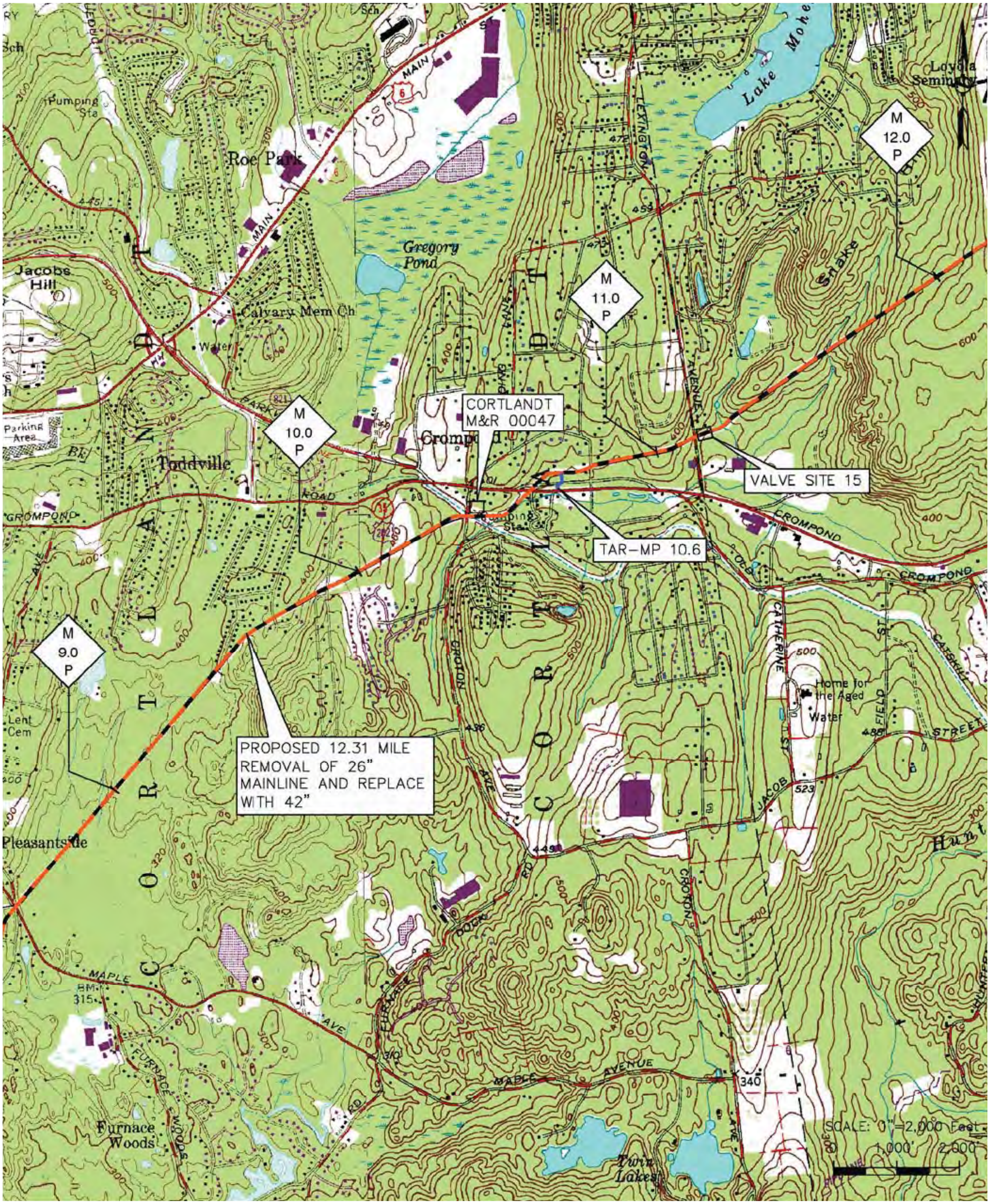
Appendix B

AIM Project

Facility Location Maps

Stony Point to Yorktown Take-up and Relay

Page 3 of 5



Appendix B

AIM Project

Facility Location Maps

Stony Point to Yorktown Take-up and Relay

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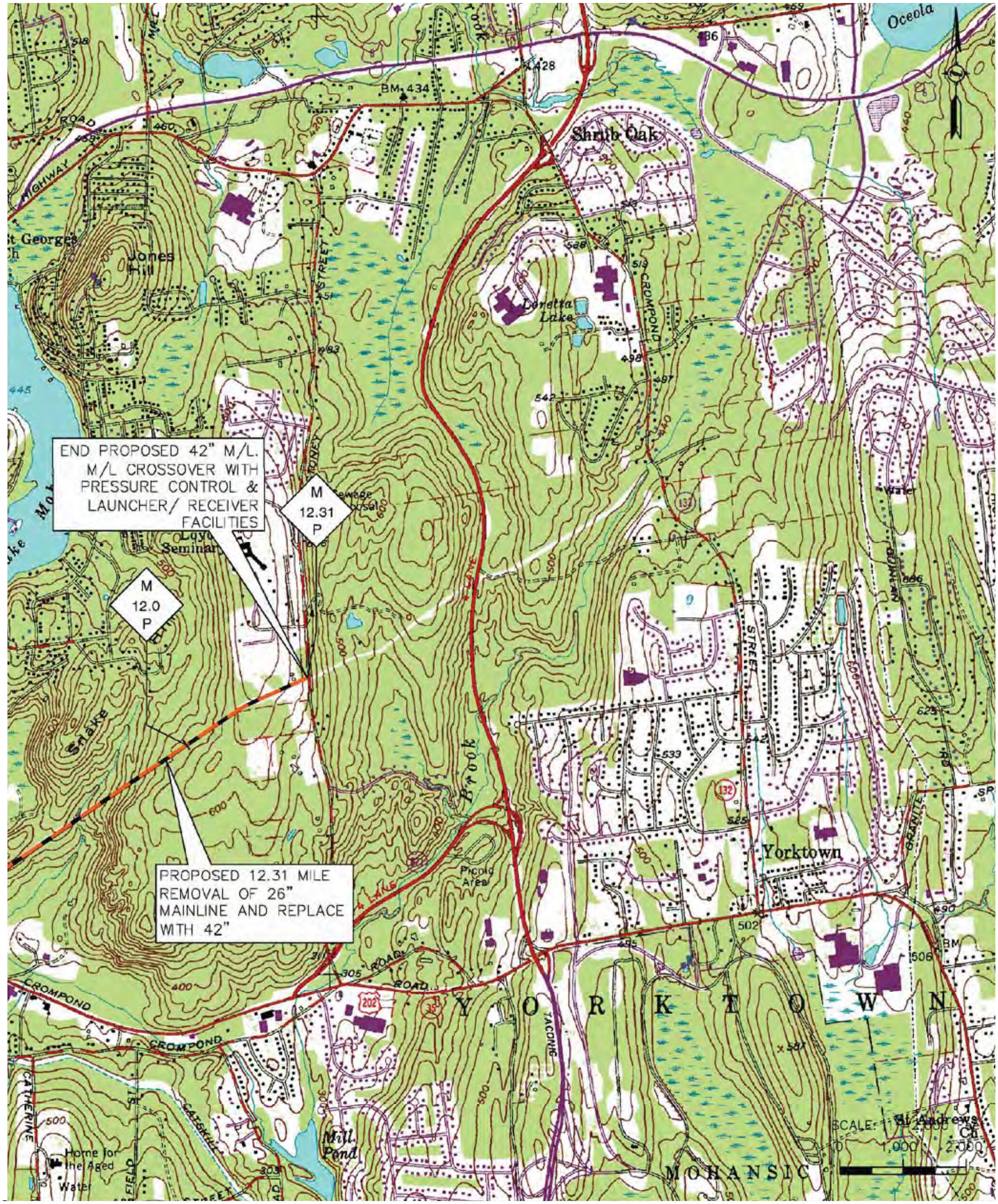


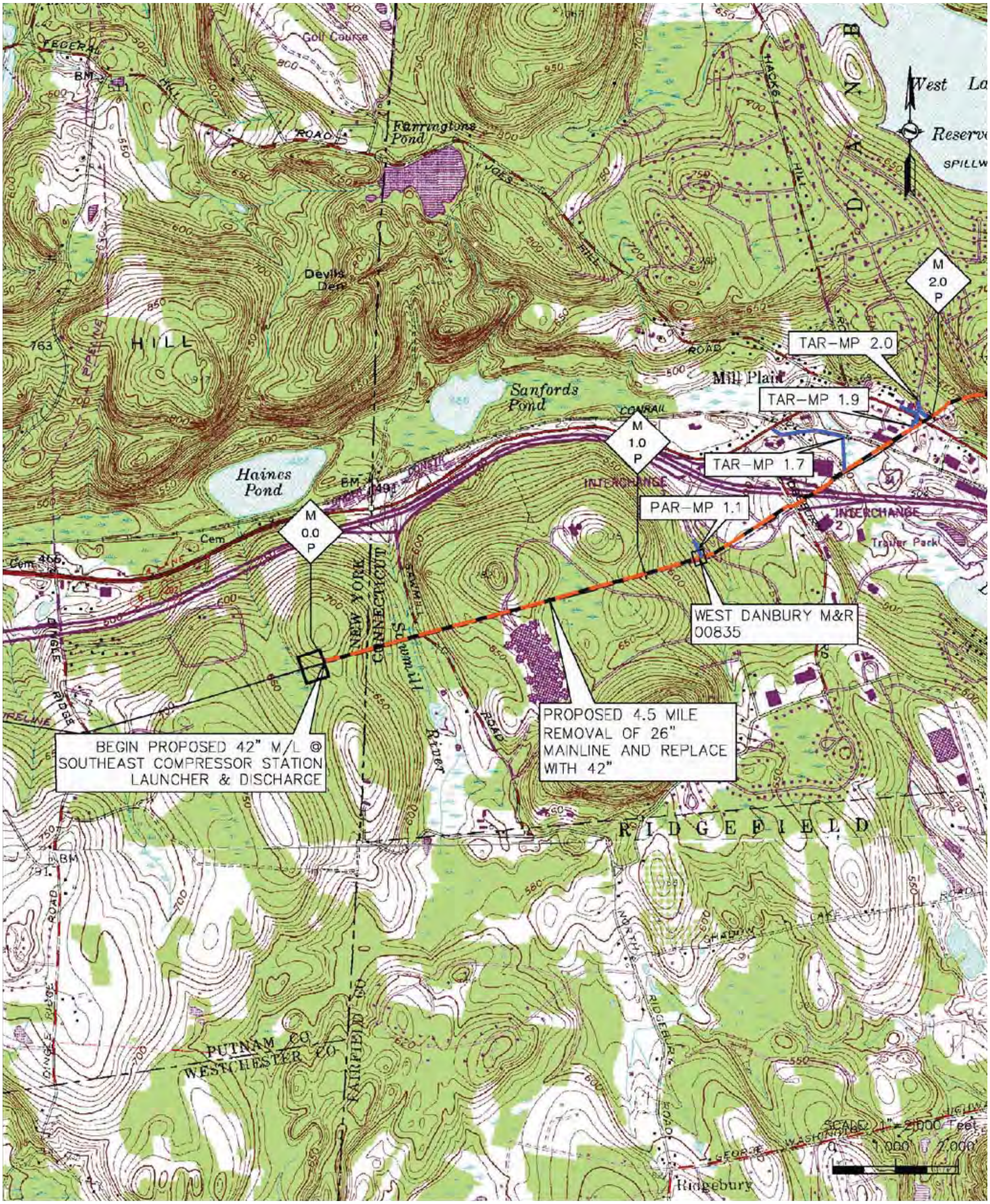
Appendix B

AIM Project

Facility Location Maps

Stony Point to Yorktown Take-up and Relay

Page 5 of 5



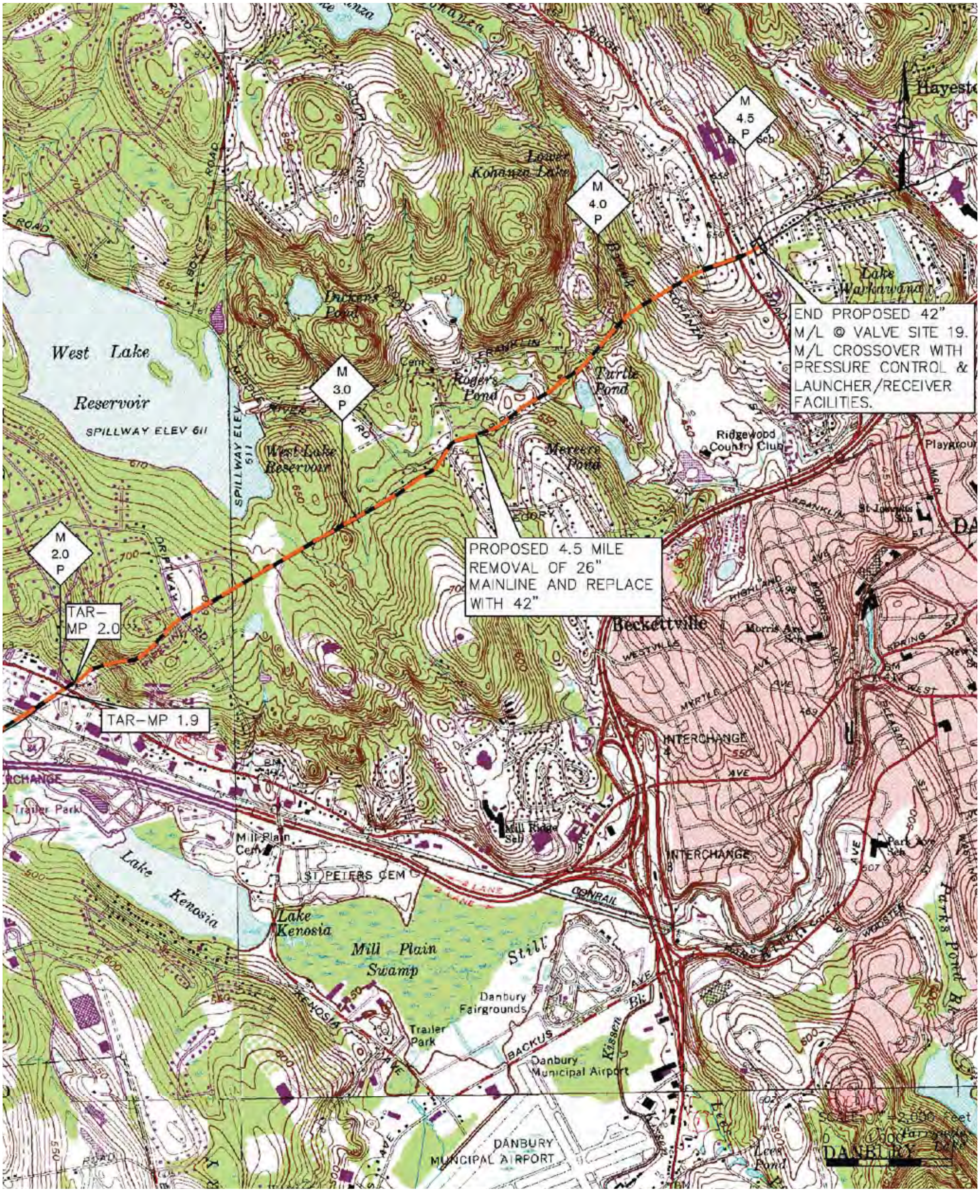
Appendix B

AIM Project

Facility Location Maps

Southeast to MLV 19 Take-up and Relay

Page 1 of 2



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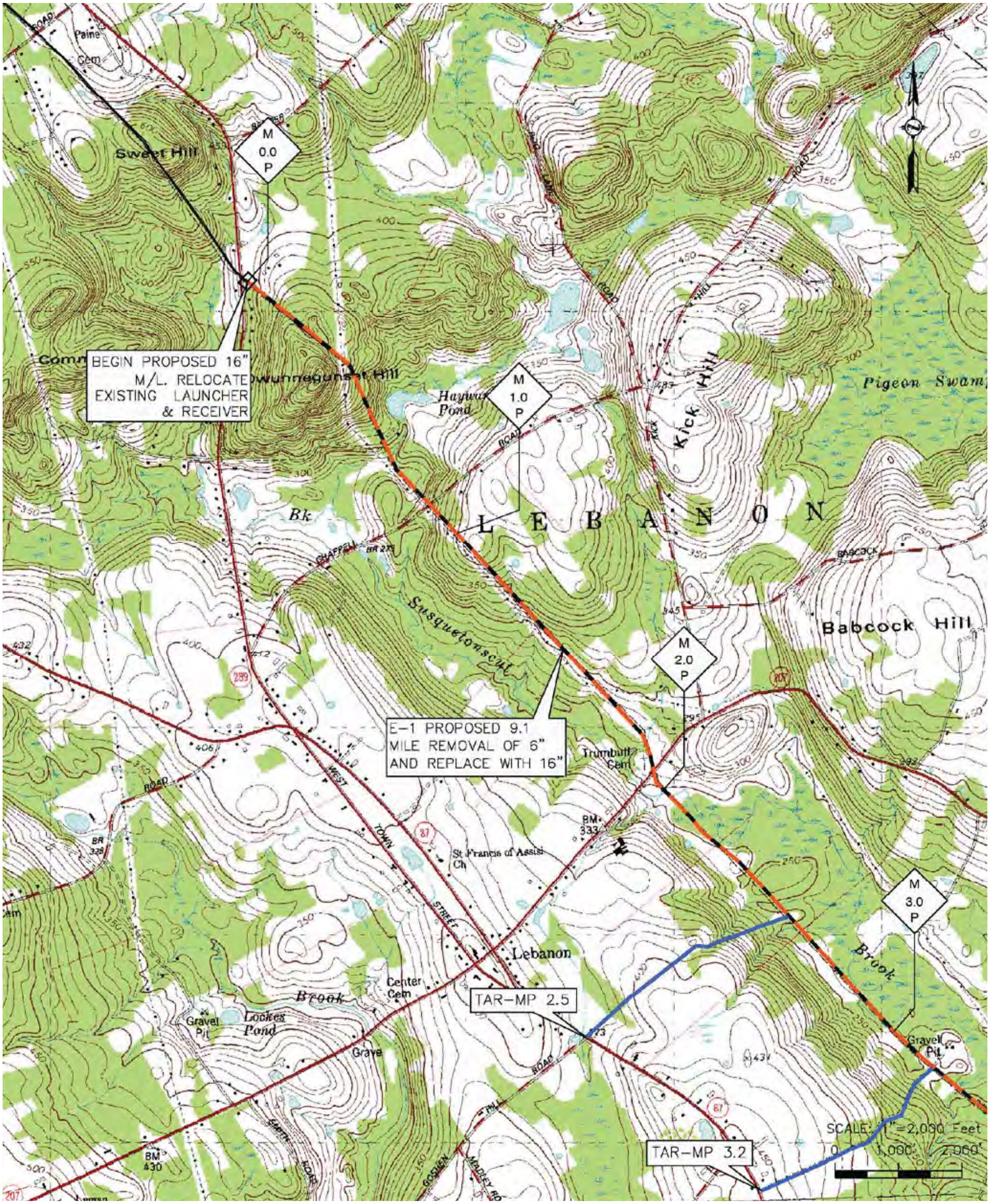
AIM Project

Facility Location Maps

Southeast to MLV 19 Take-up and Relay



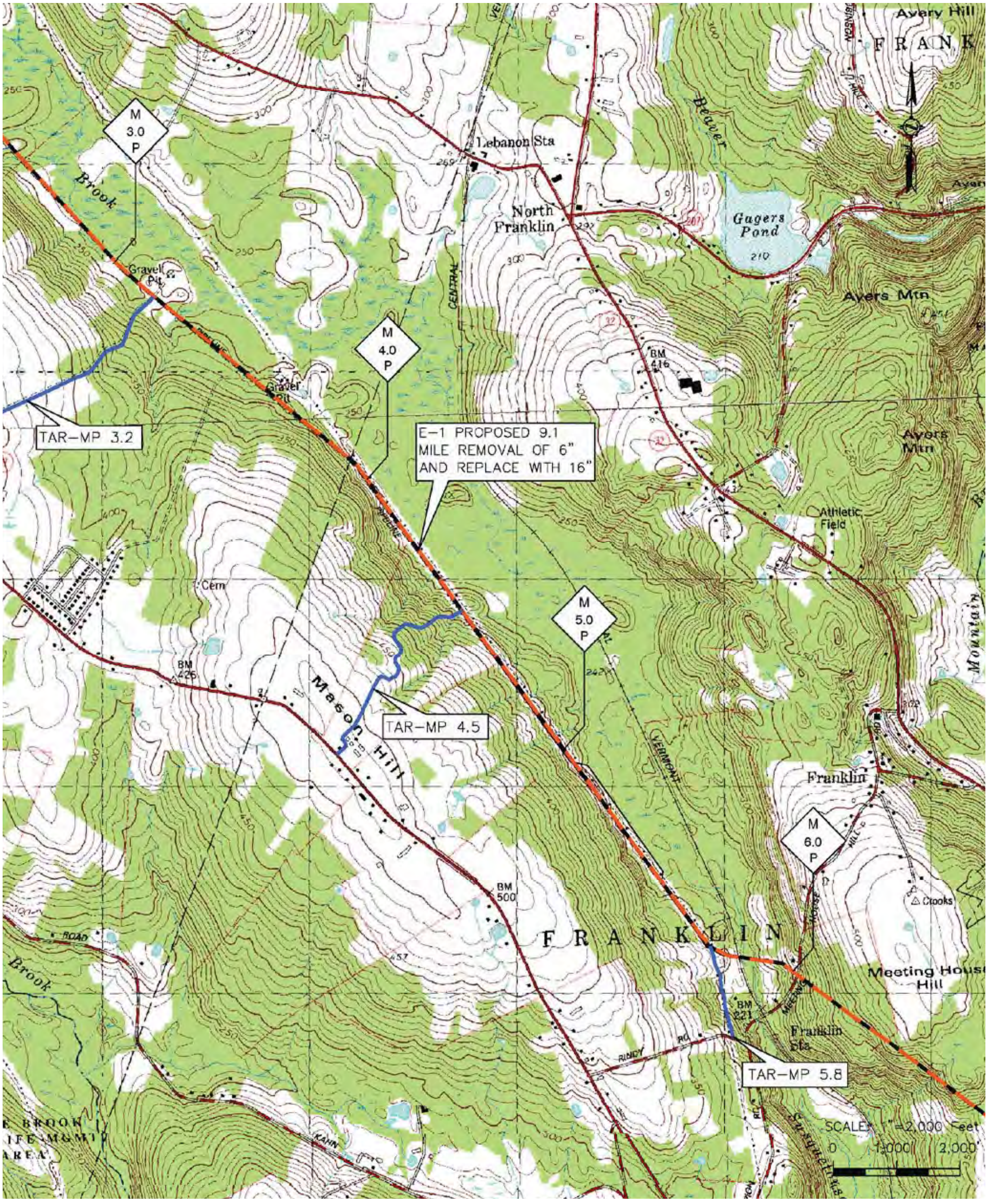
Appendix B

AIM Project

Facility Location Maps

E-1 System Lateral Take-up and Relay

Page 1 of 3



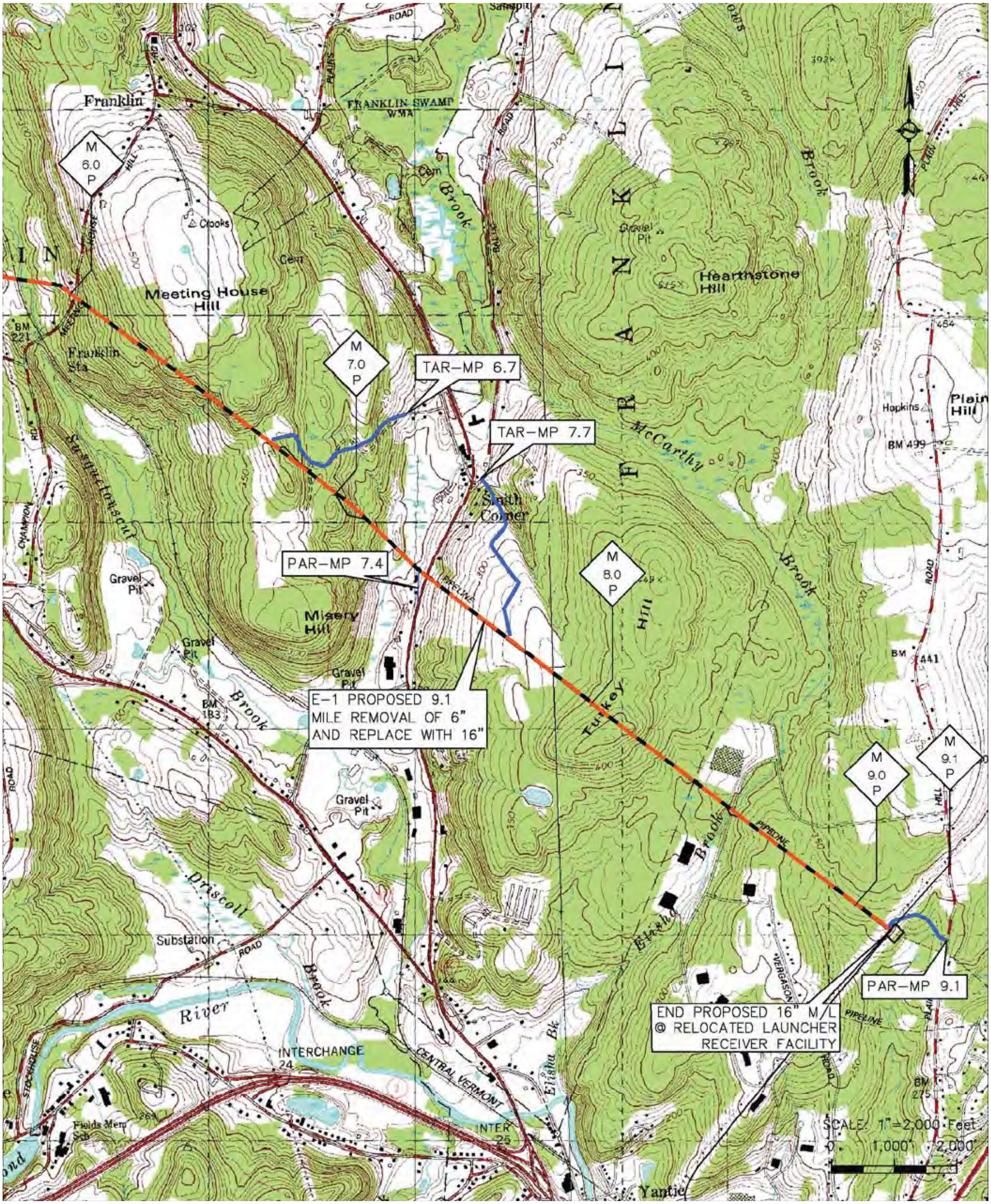
Appendix B

AIM Project

Facility Location Maps

E-1 System Lateral Take-up and Relay

Page 2 of 3



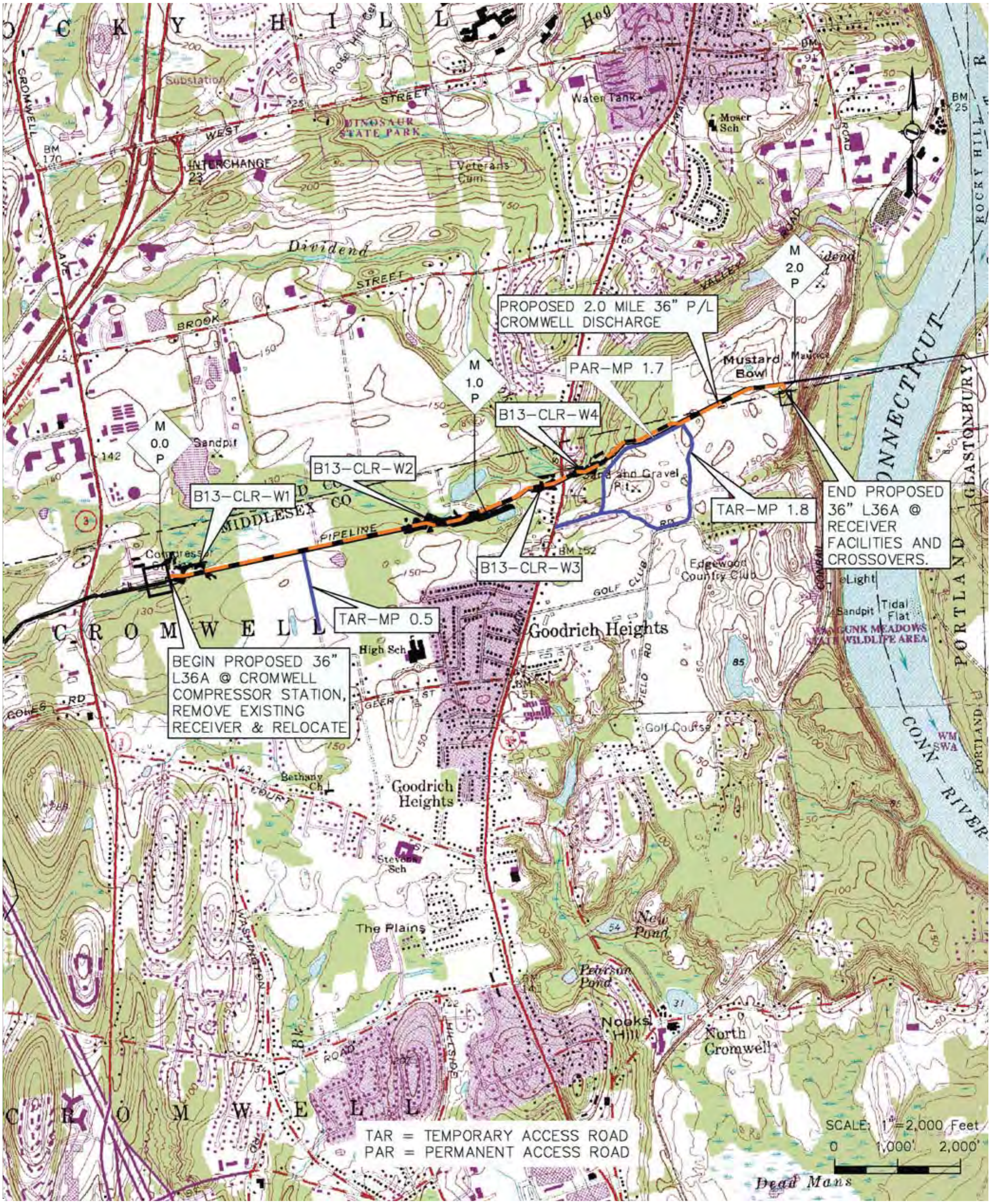
Appendix B

AIM Project

Facility Location Maps

E-1 System Lateral Take-up and Relay

Page 3 of 3

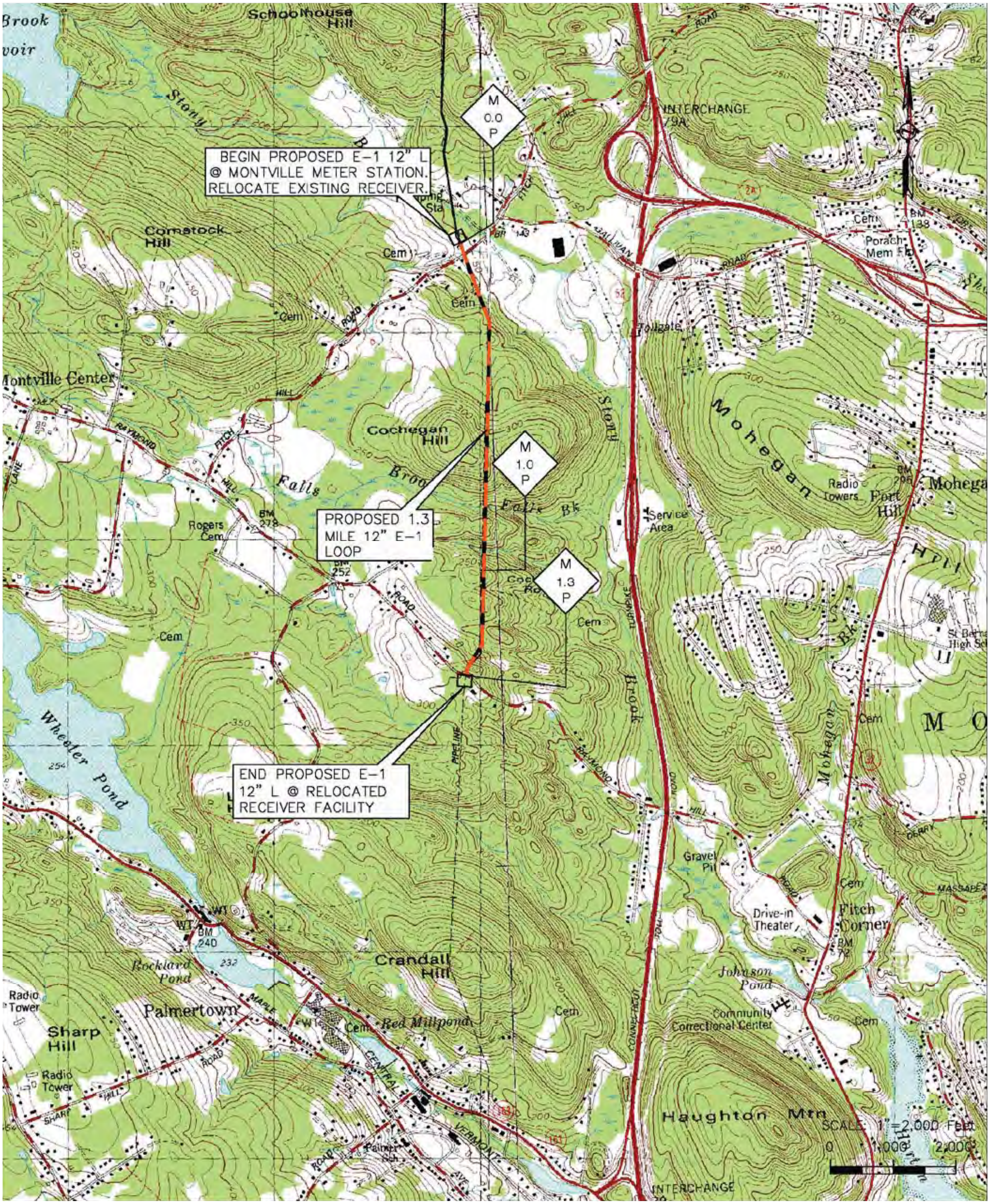


Appendix B

AIM Project

Facility Location Maps

Line-36-A Loop Extension



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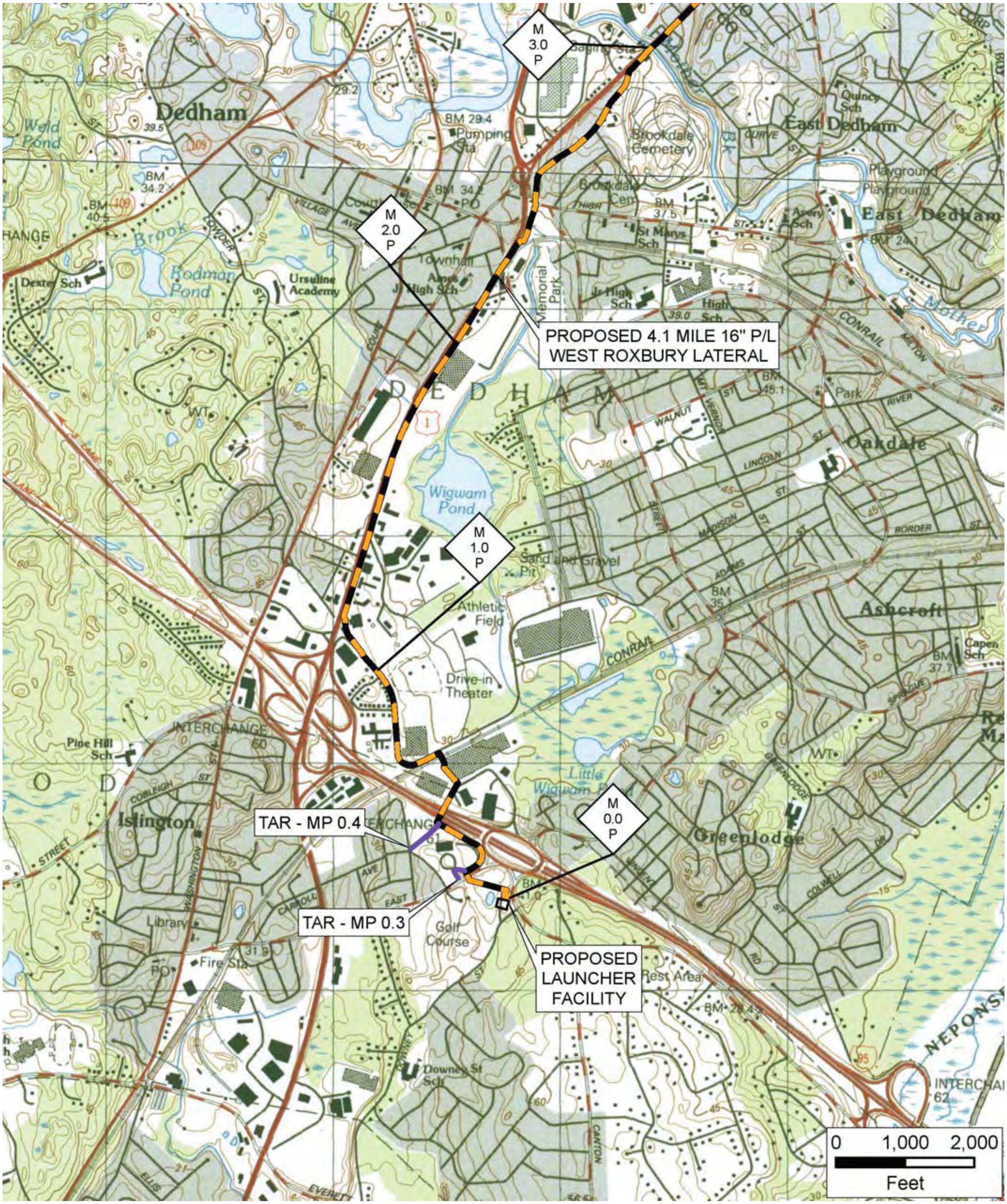
AIM Project

Facility Location Maps

E-1 System Lateral Loop Extension



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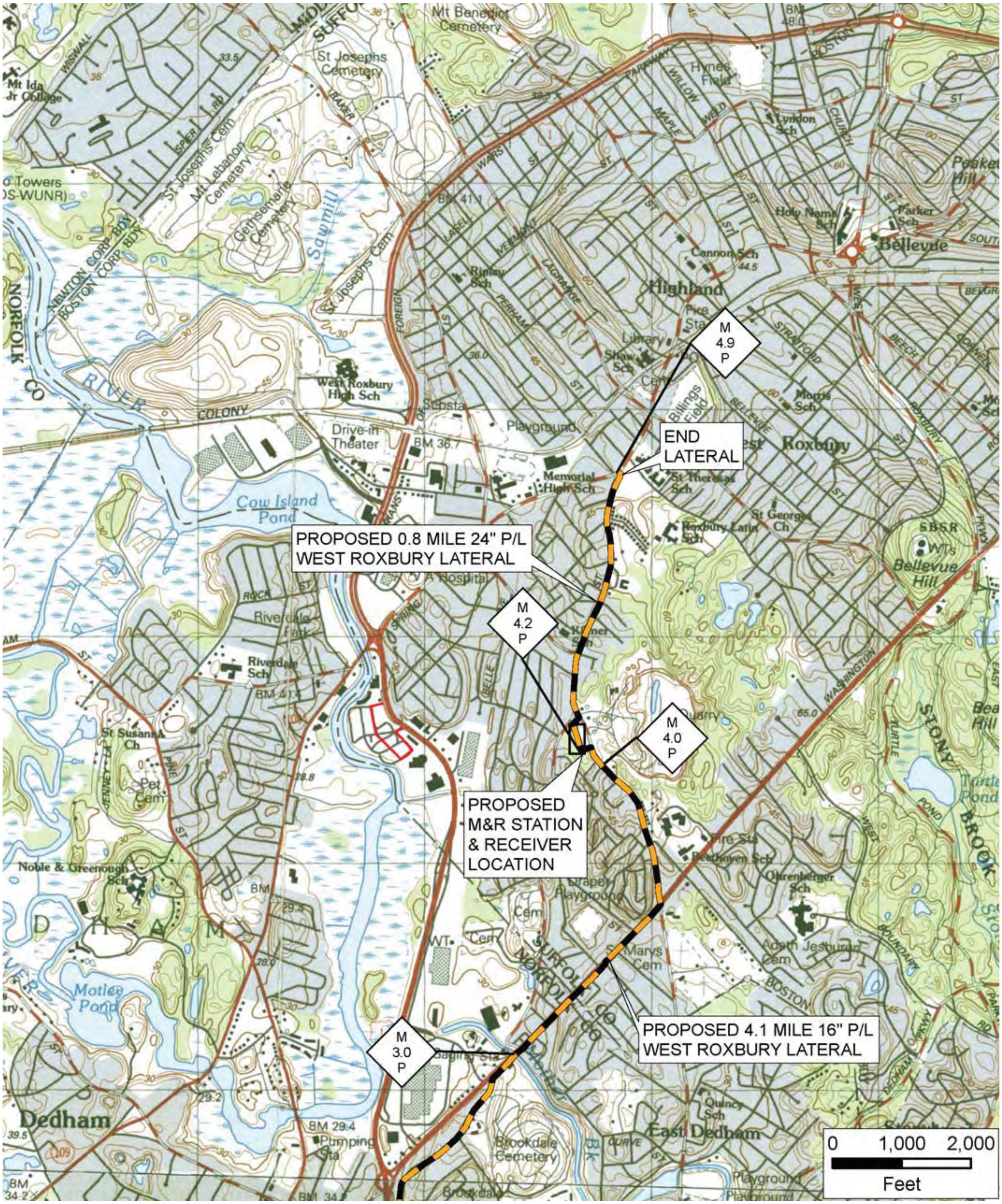
AIM Project
Facility Location Maps
West Roxbury Lateral



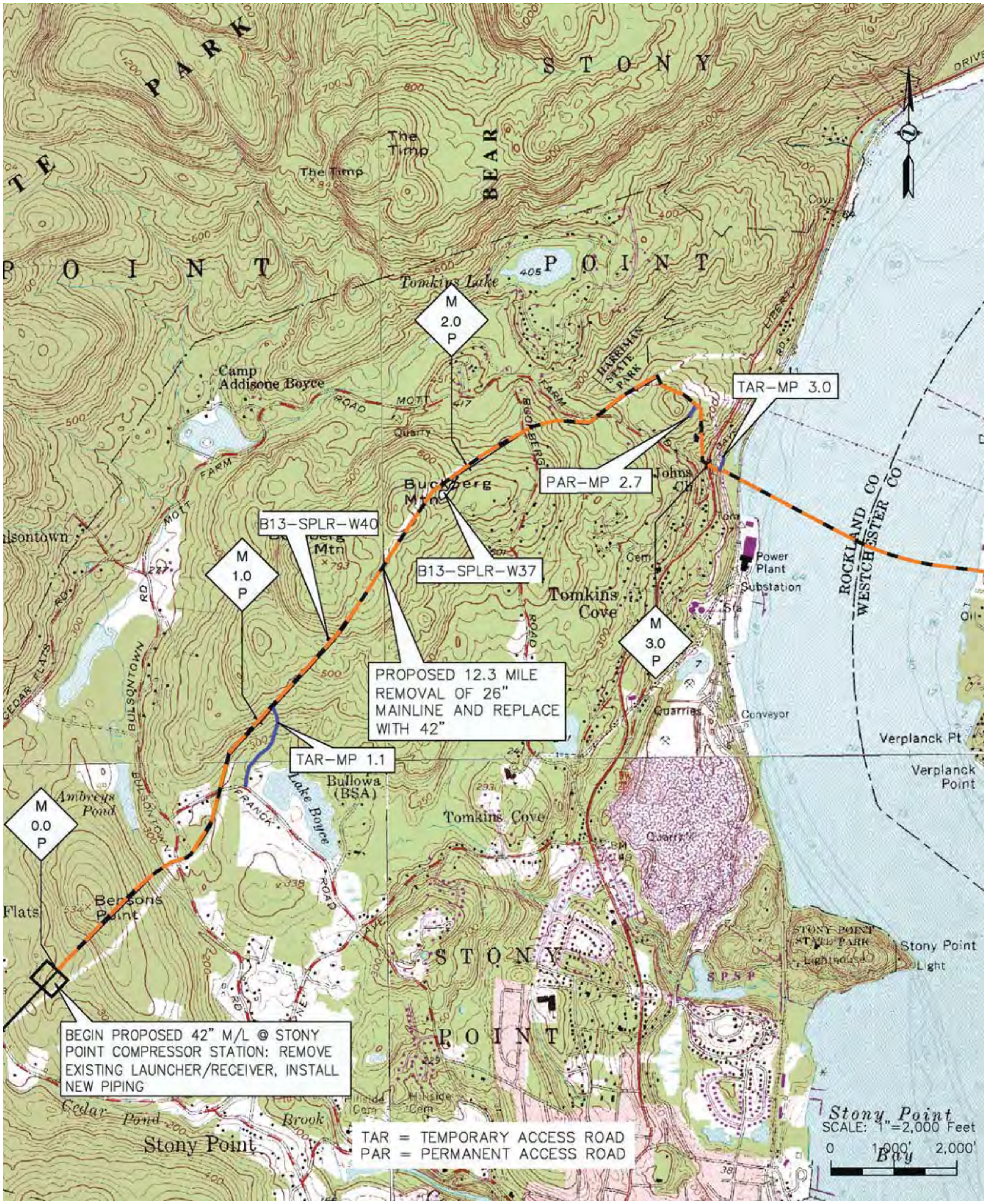
Appendix B

AIM Project

Facility Location Maps

West Roxbury Lateral

Page 2 of 2



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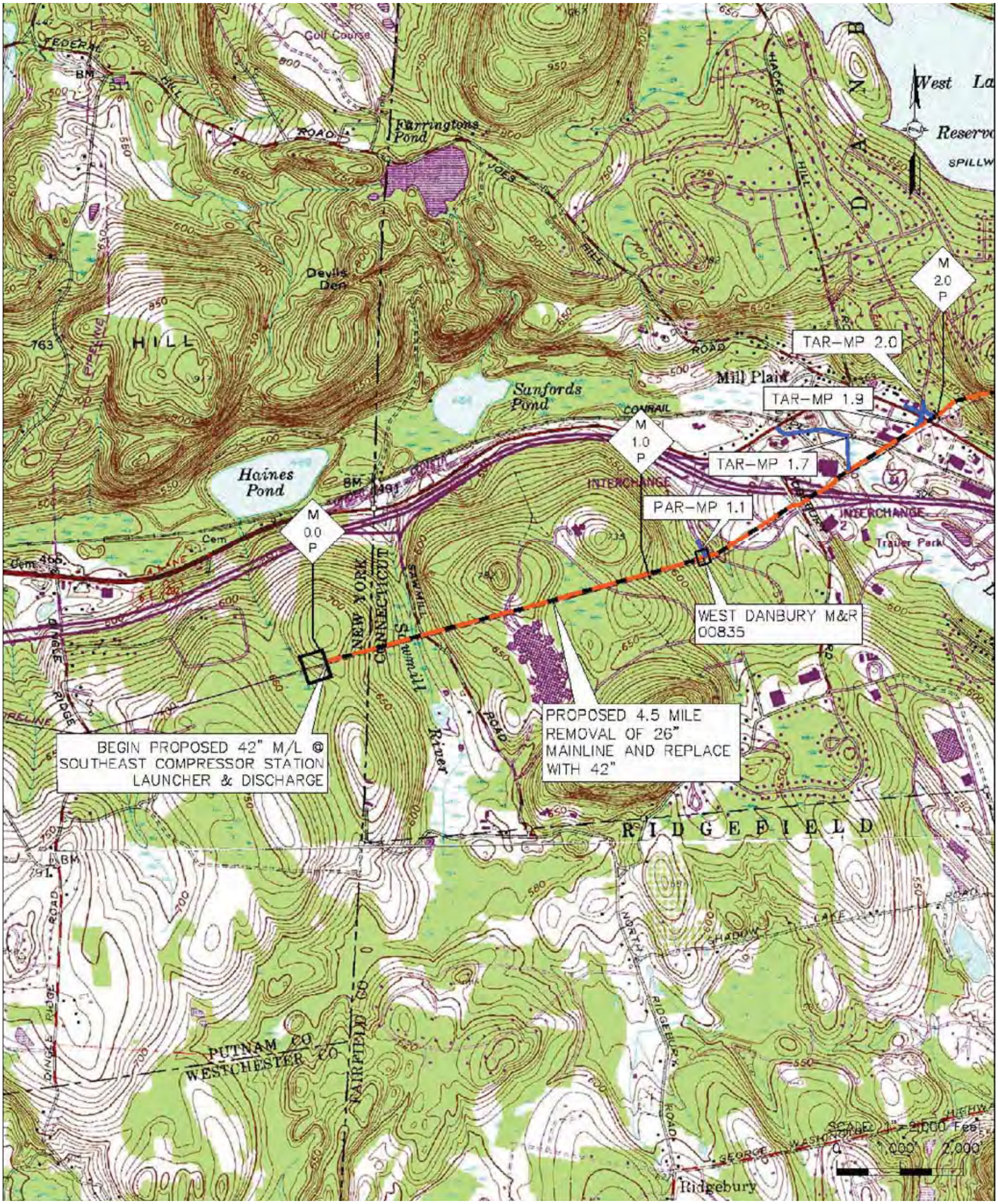
AIM Project

Facility Location Maps

Stony Point Compressor Station



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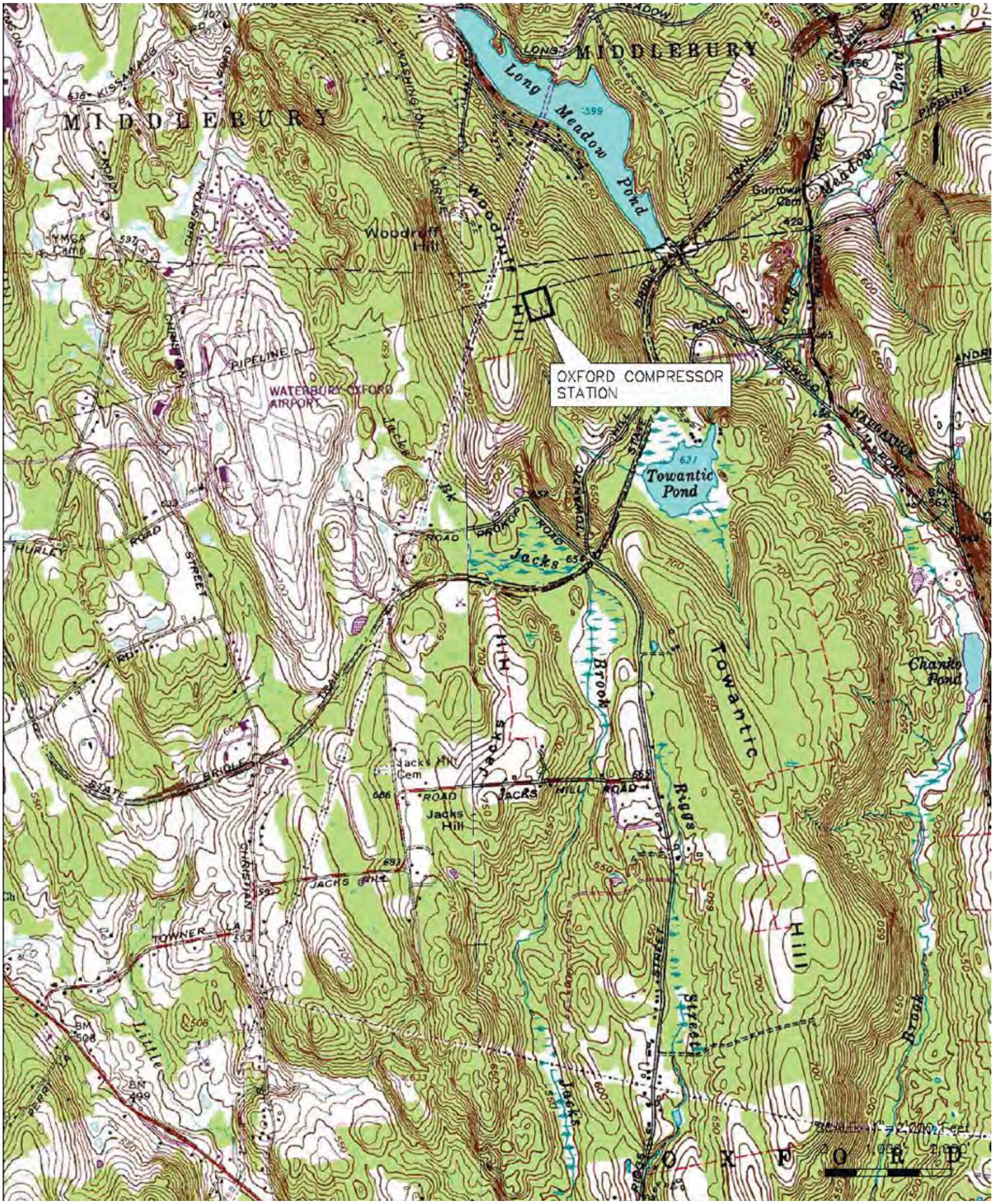
AIM Project
Facility Location Maps
Southeast Compressor Station



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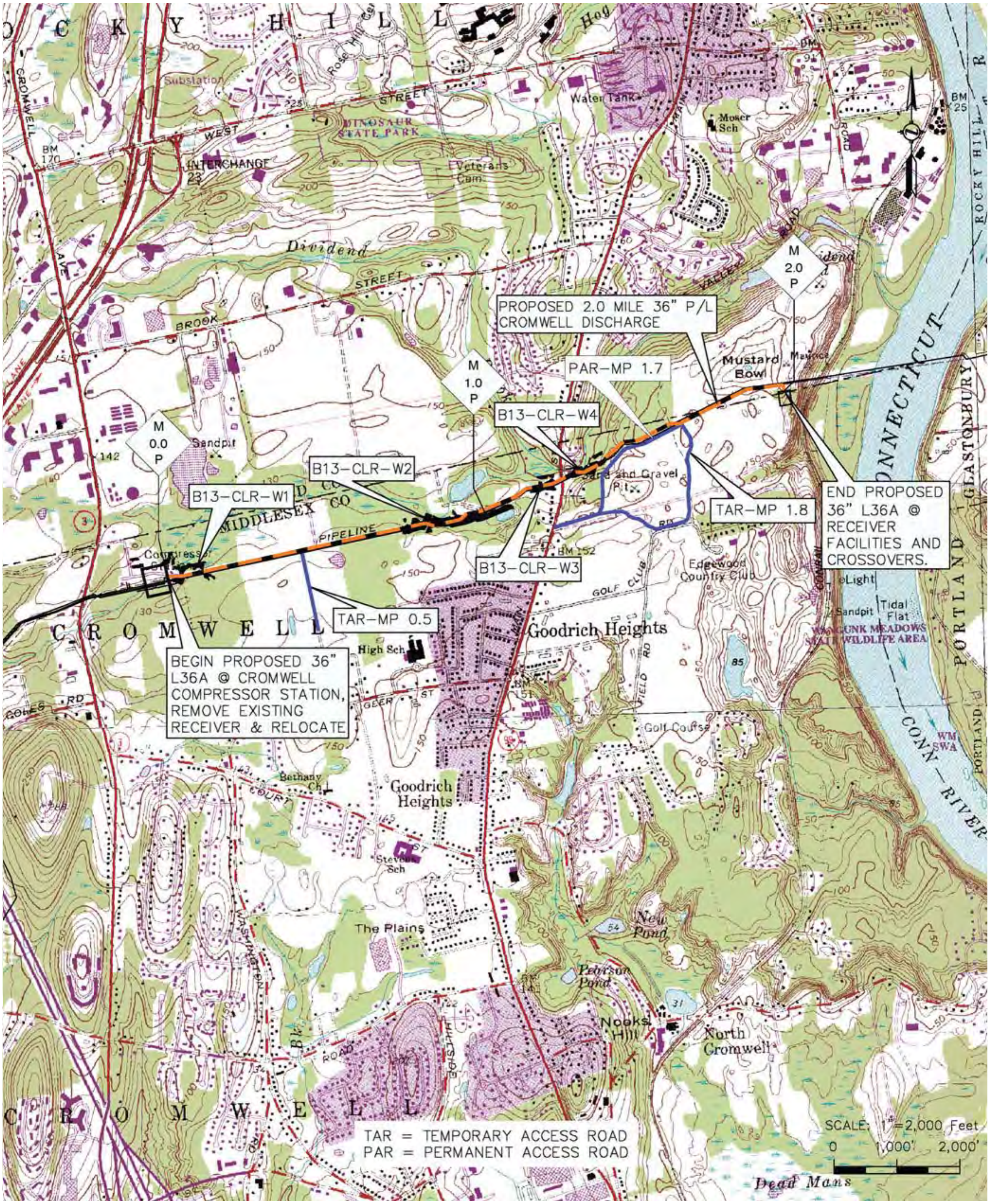
AIM Project

Facility Location Maps

Oxford Compressor Station



Appendix B

AIM Project

Facility Location Maps

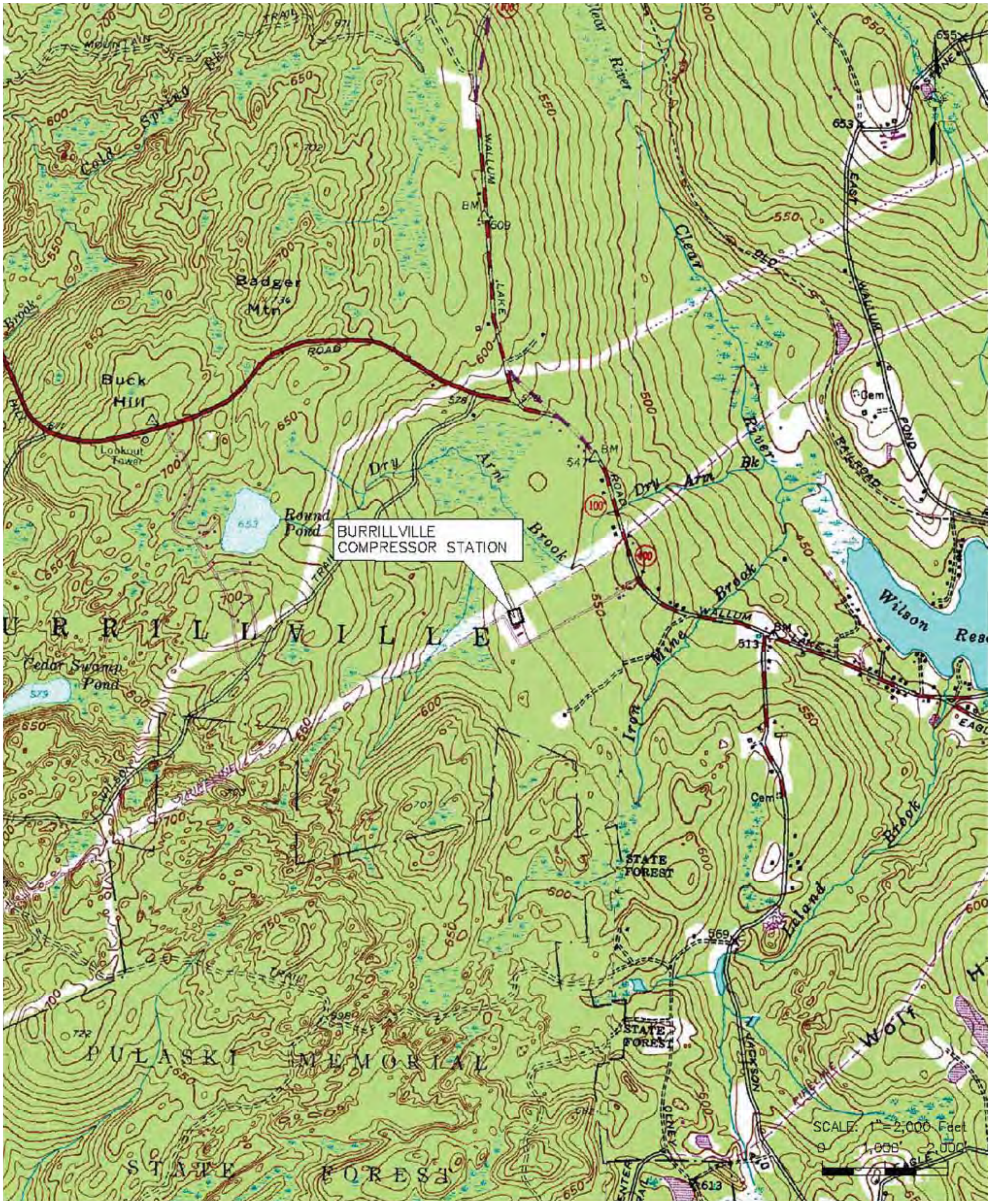
Cromwell Compressor Station

Appendix B

AIM Project

Facility Location Maps

Chaplin Compressor Station



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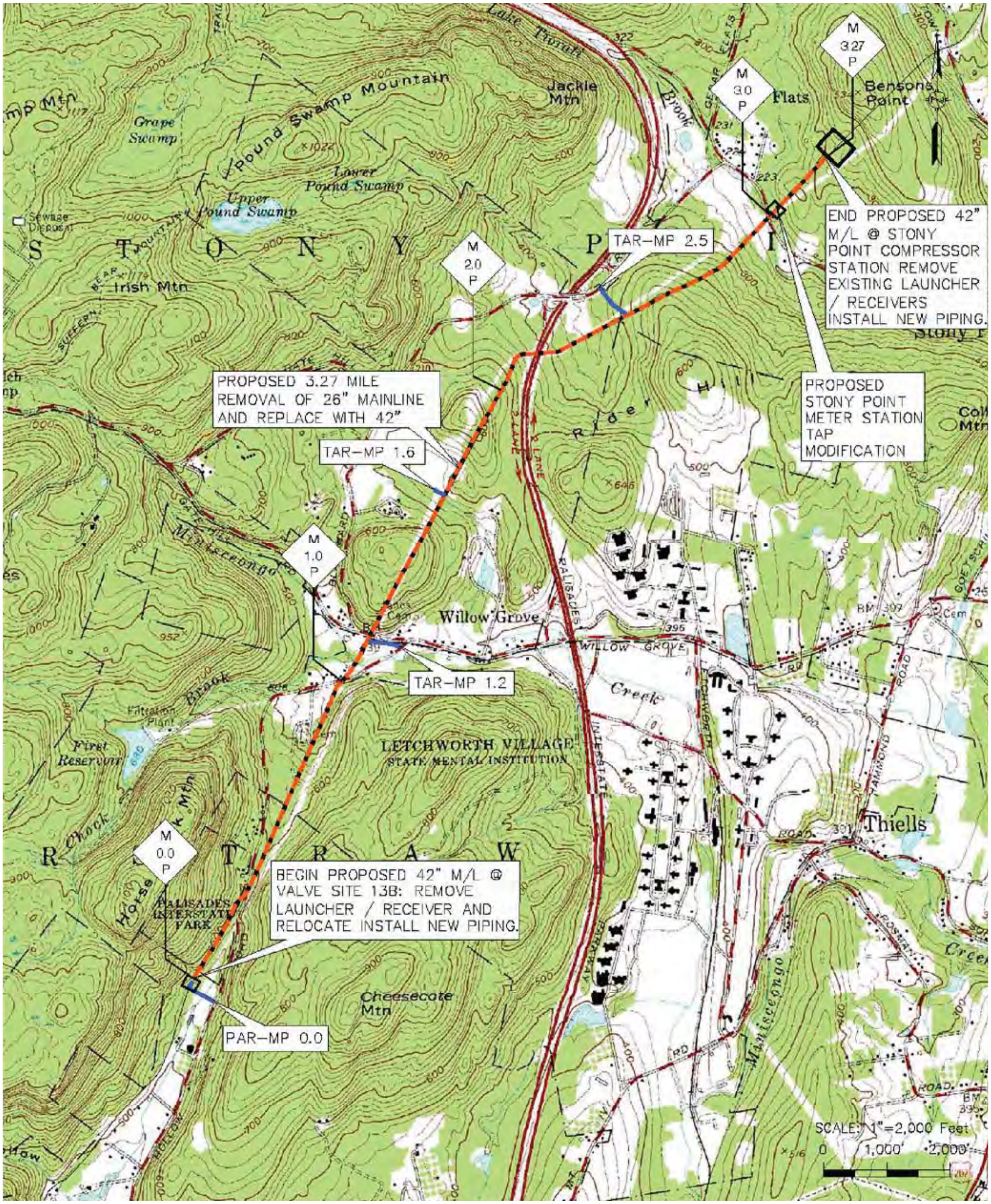
AIM Project
Facility Location Maps
Burrillville Compressor Station



Appendix B

AIM Project

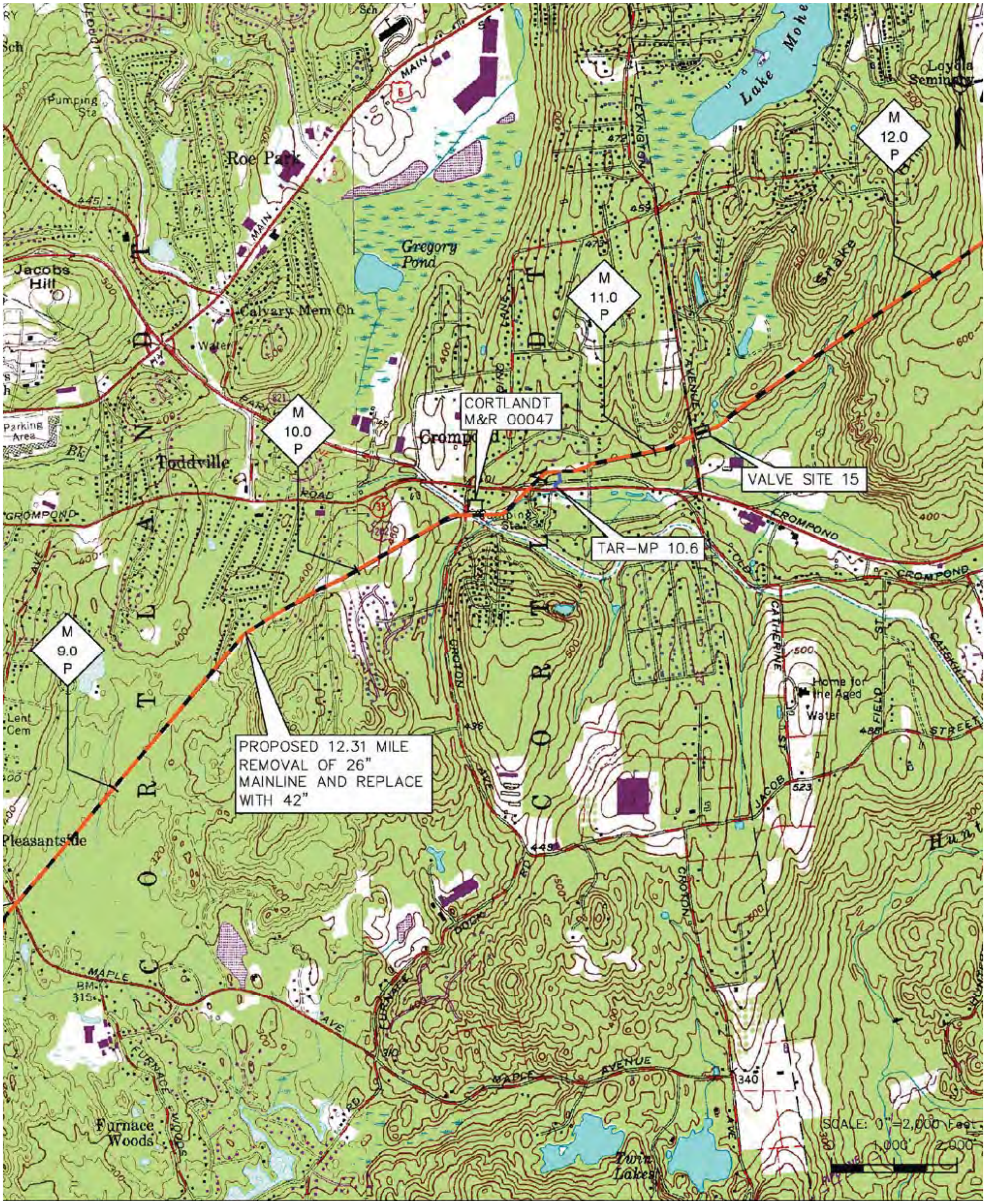
Facility Location Maps

Stony Point M&R Station

Appendix B
AIM Project

Facility Location Maps

Peekskill M&R Station



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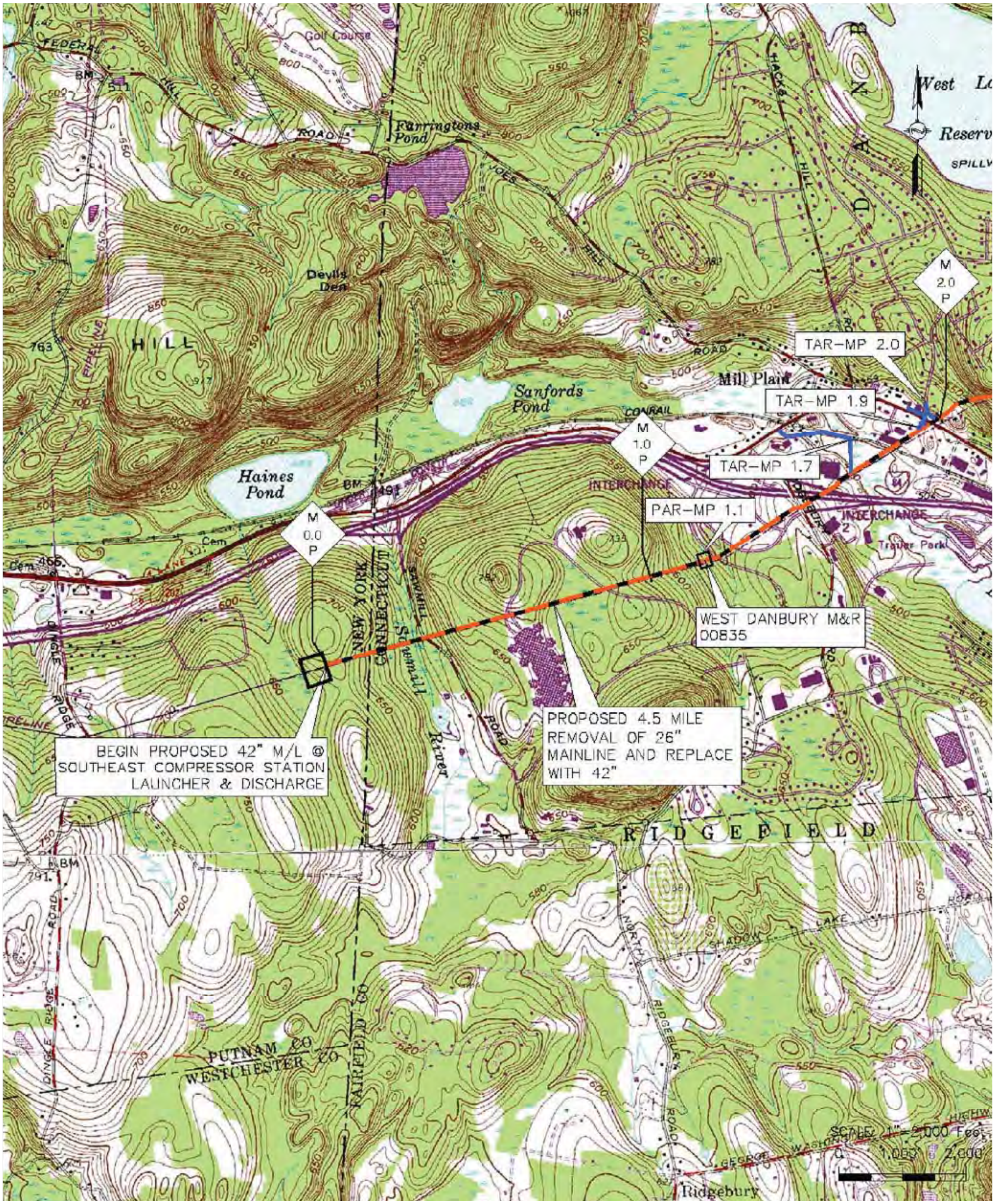
AIM Project

Facility Location Maps

Cortlandt M&R Station



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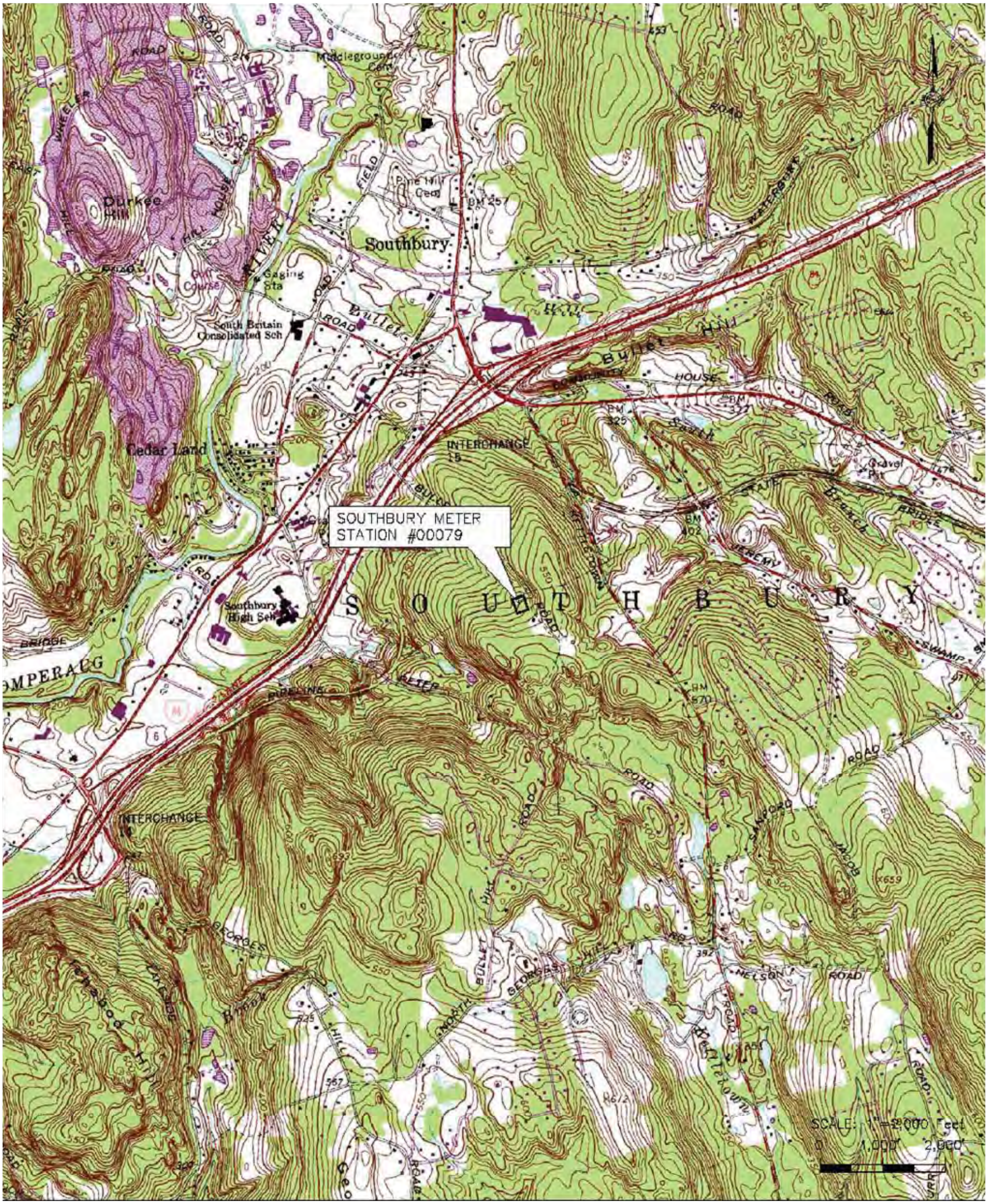
AIM Project

Facility Location Maps

West Danbury M&R Station



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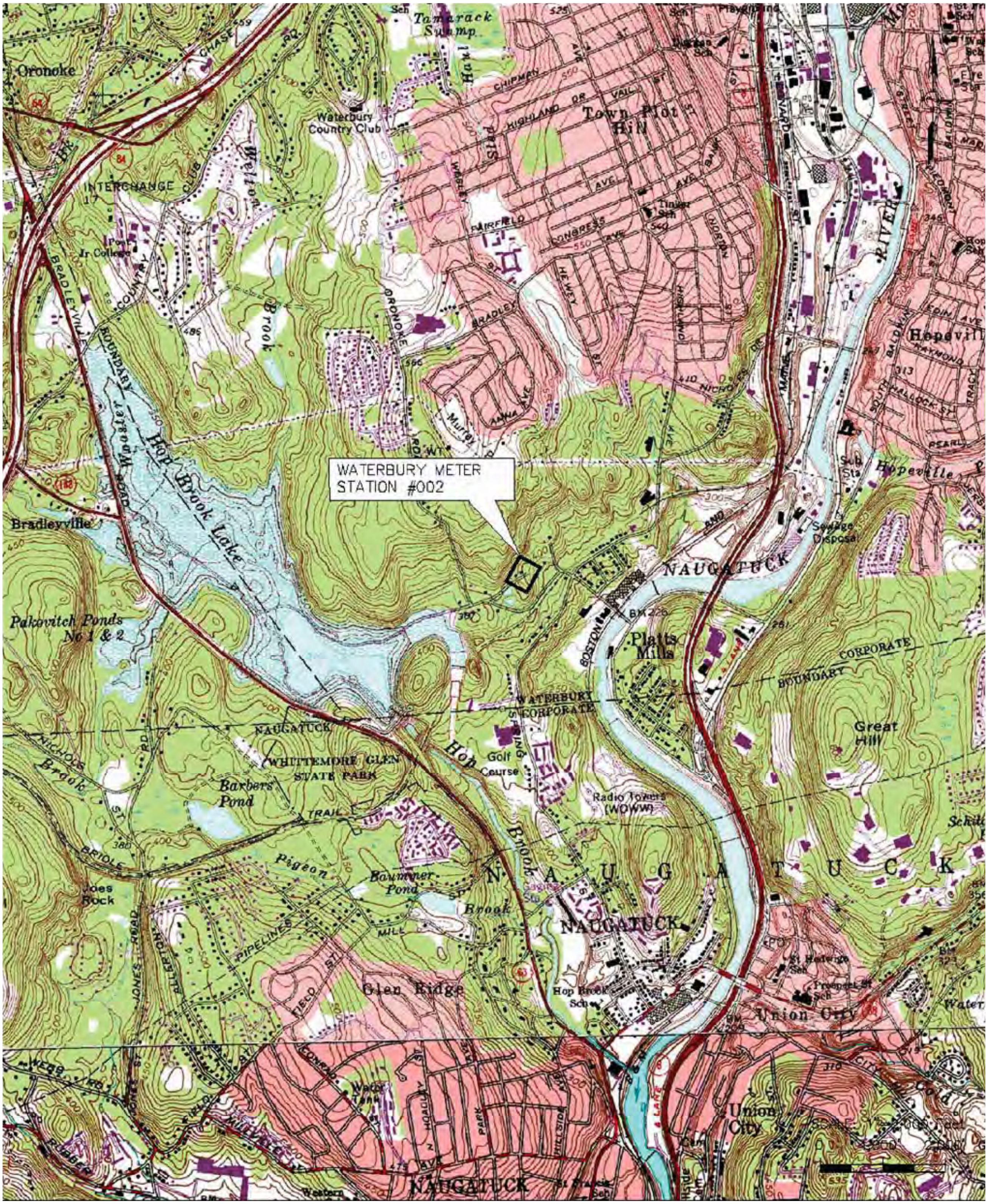
AIM Project

Facility Location Maps

Southbury M&R Station



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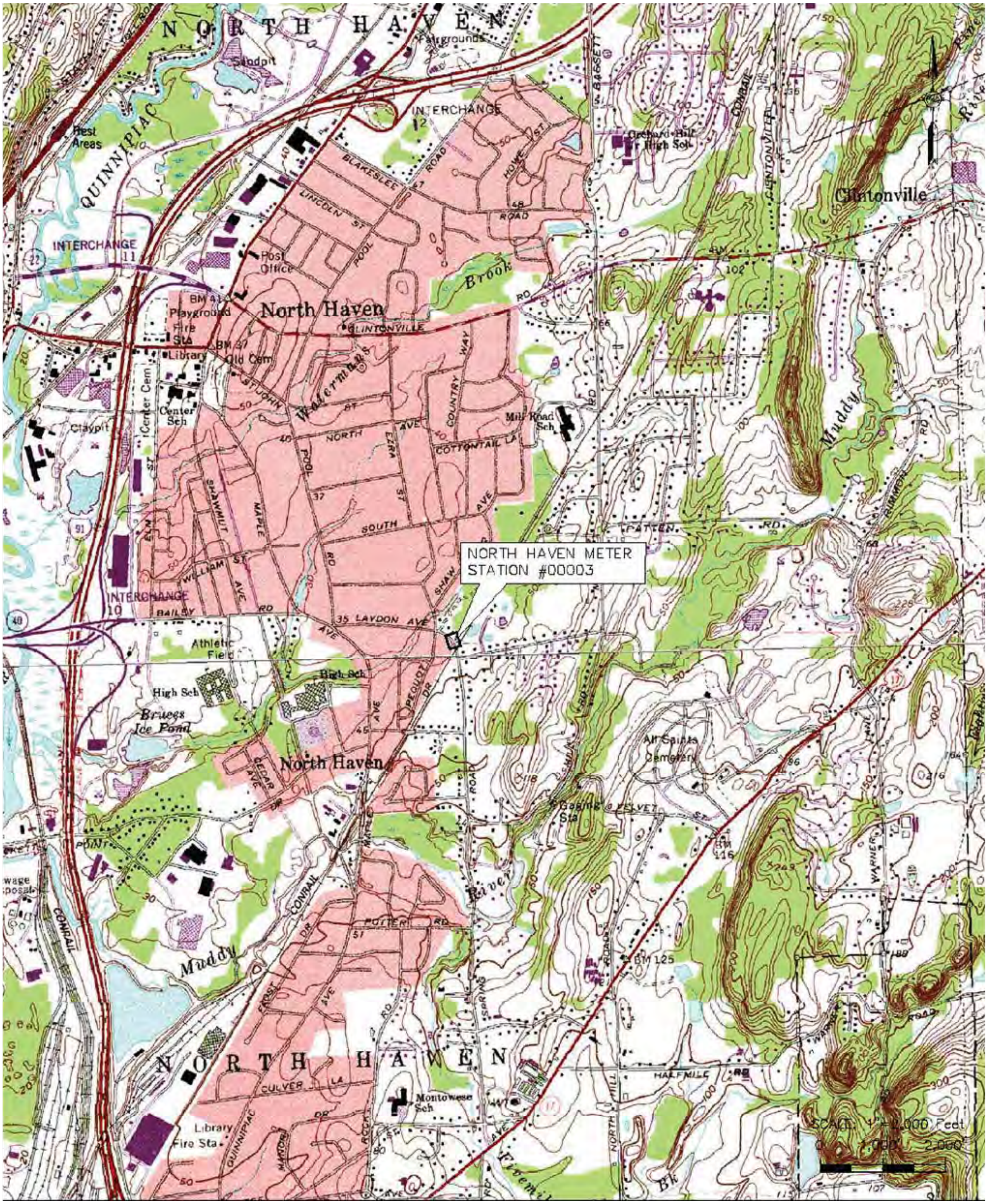
AIM Project

Facility Location Maps

Waterbury M&R Station



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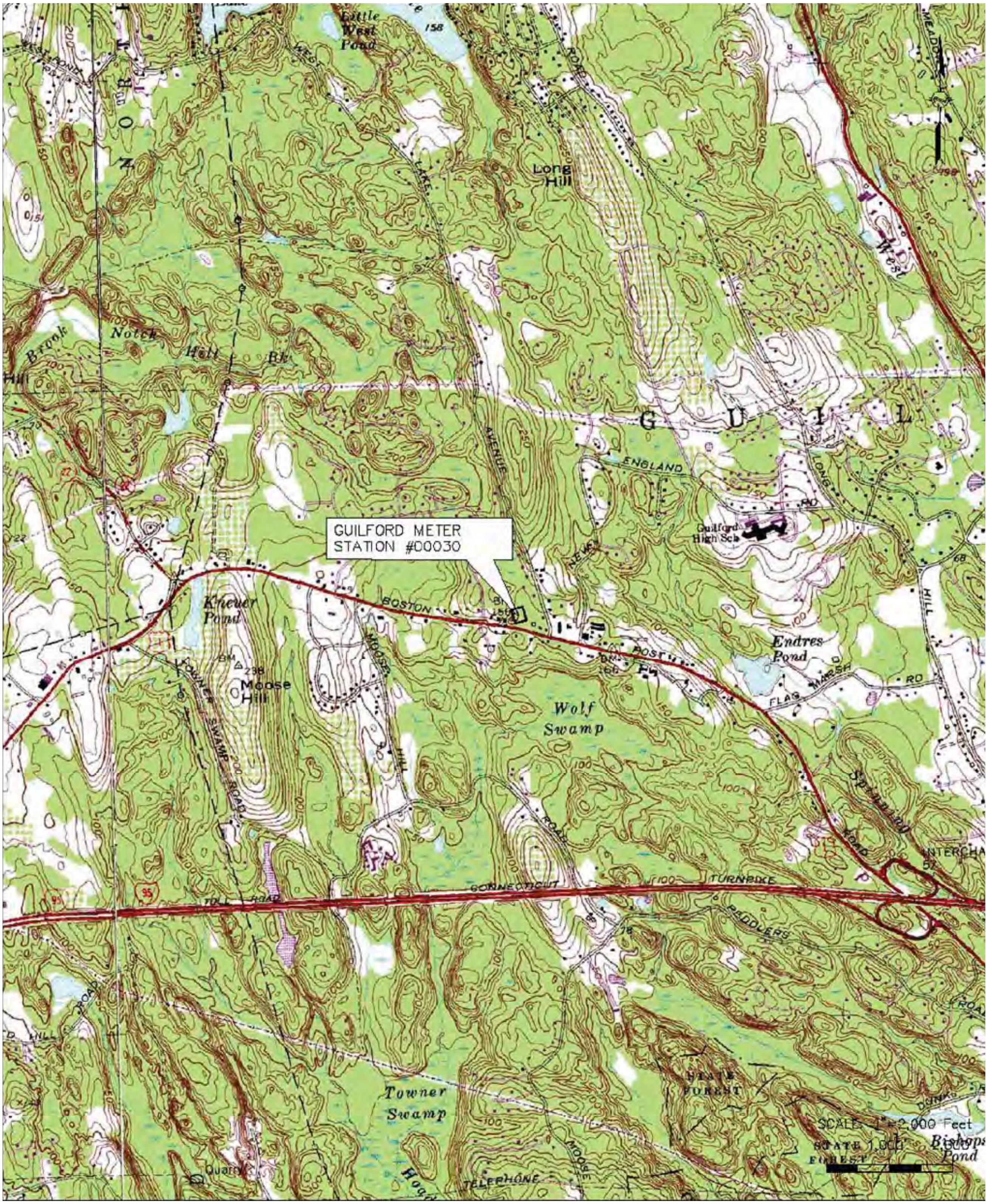
AIM Project

Facility Location Maps

North Haven M&R Station



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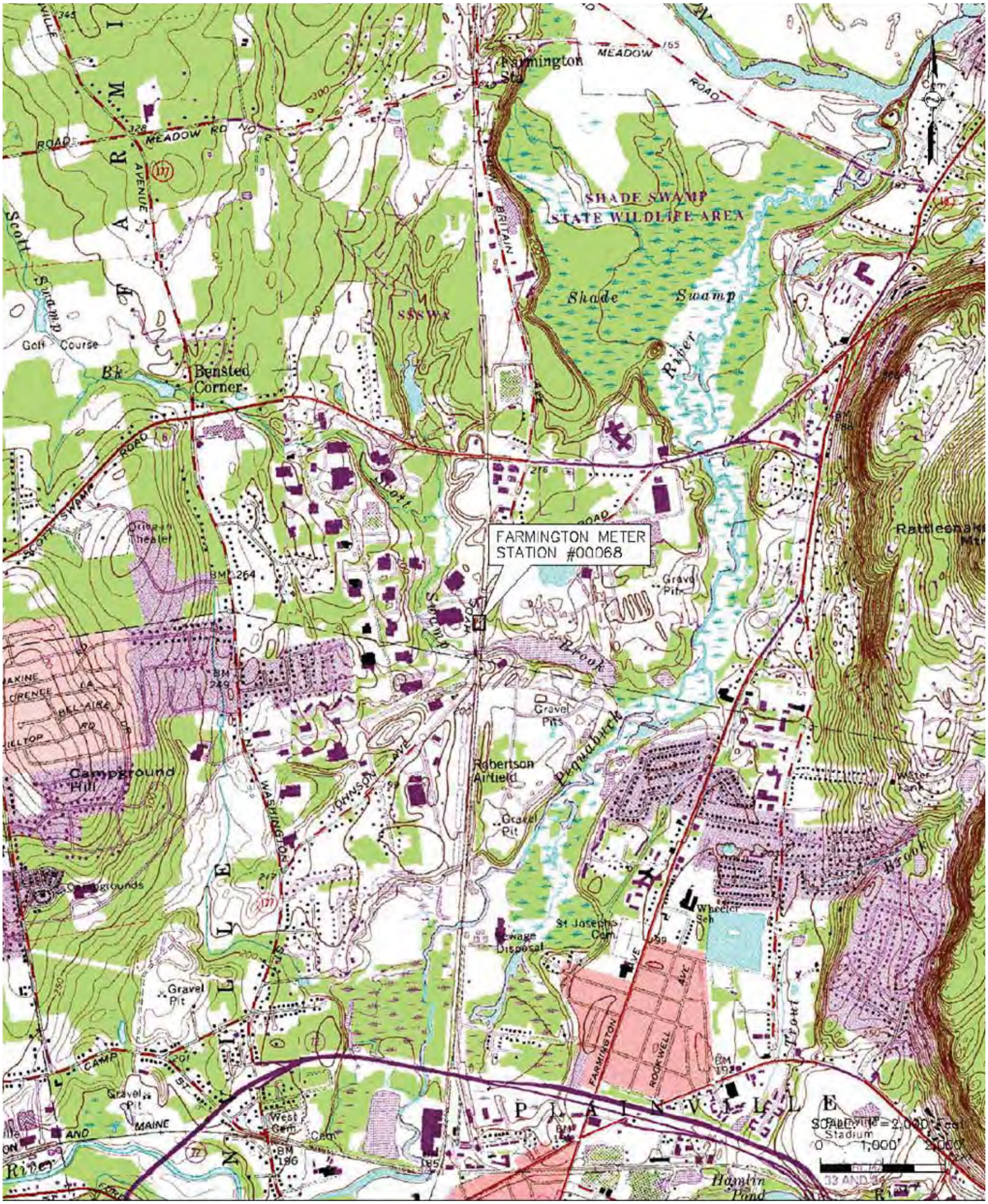
AIM Project

Facility Location Maps

Guilford M&R Station



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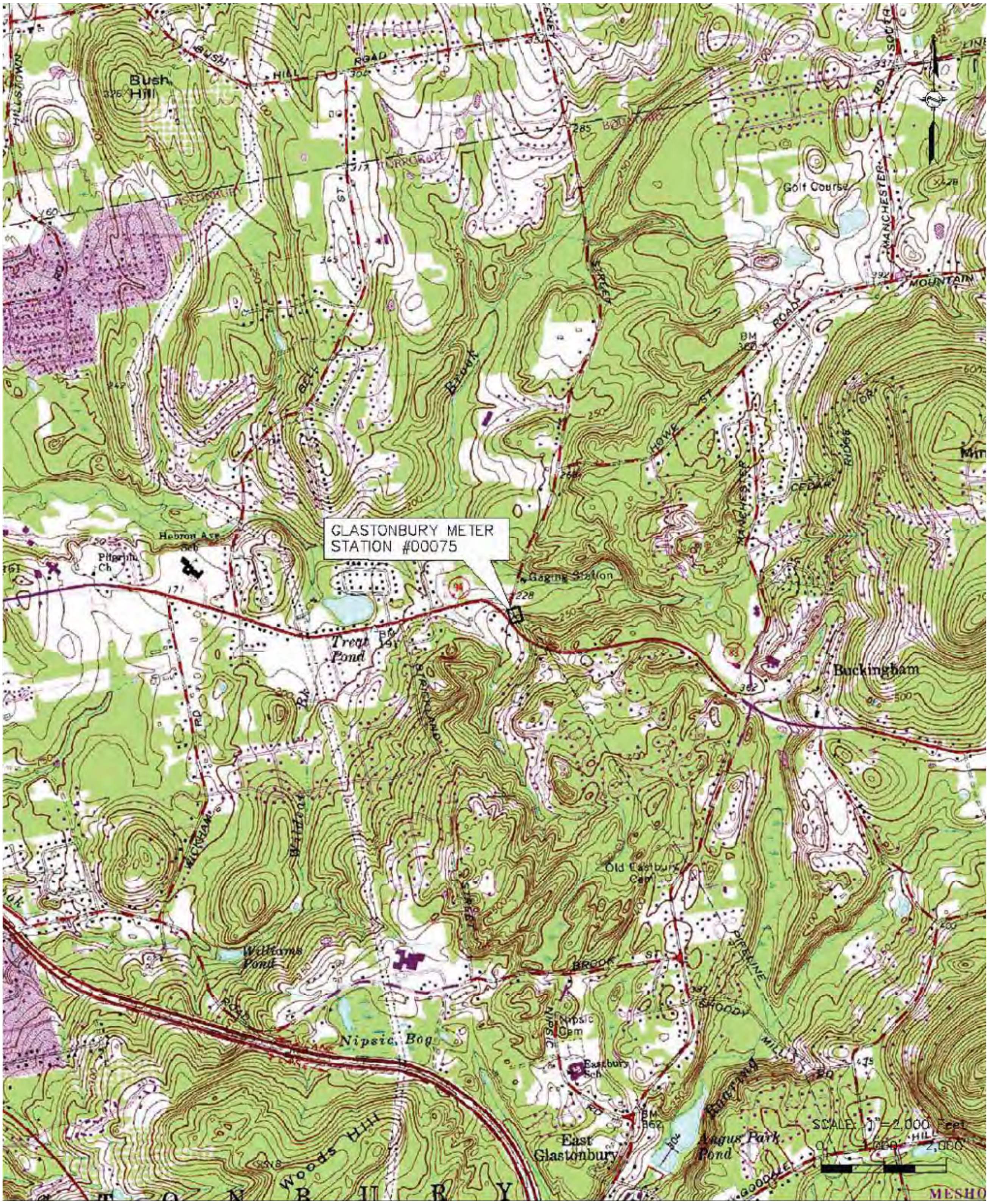
Facility Location Maps
Farmington M&R Station



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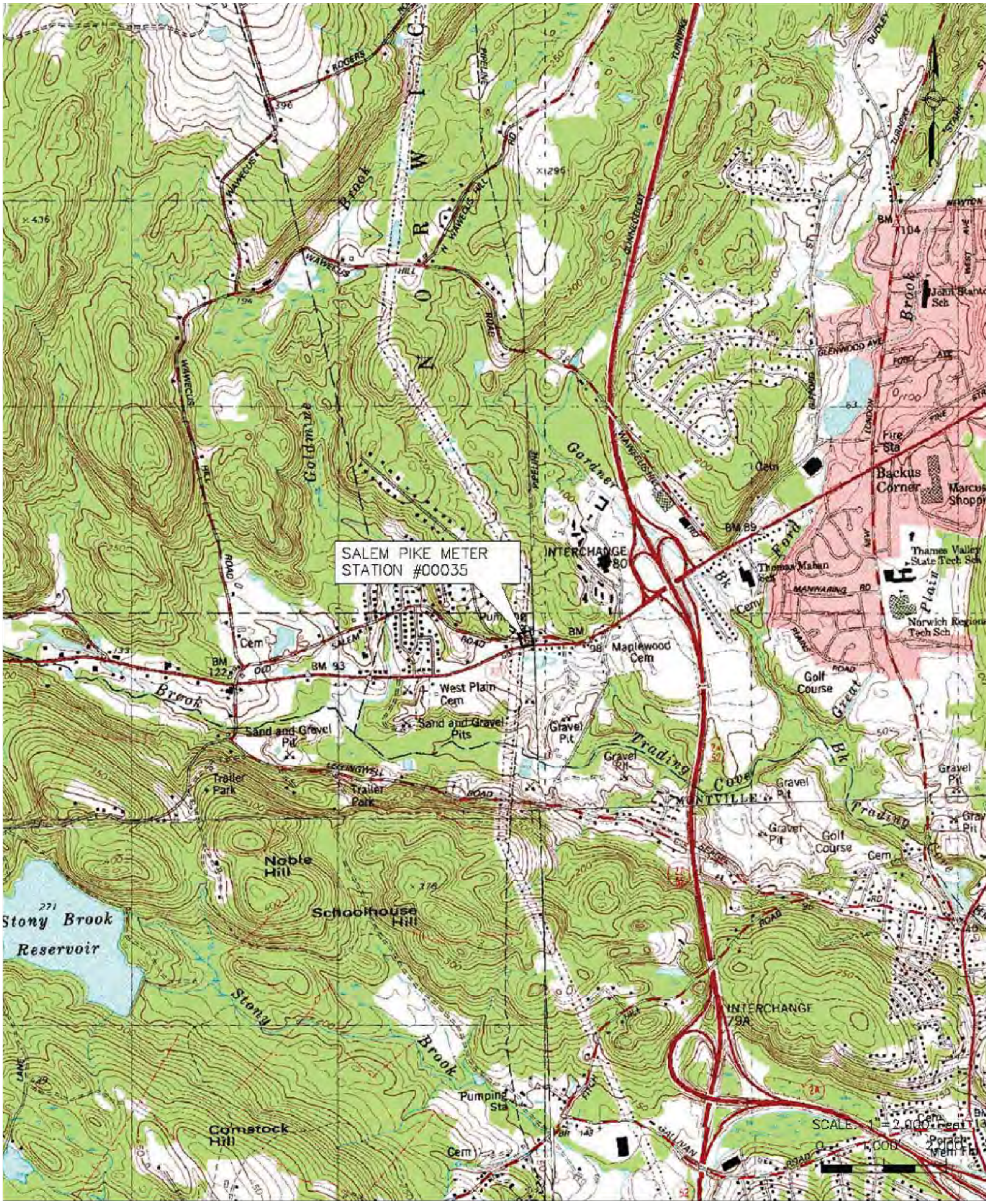
AIM Project

Facility Location Maps

Glastonbury M&R Station

Appendix B
AIM Project
Facility Location Maps
Middletown M&R Station



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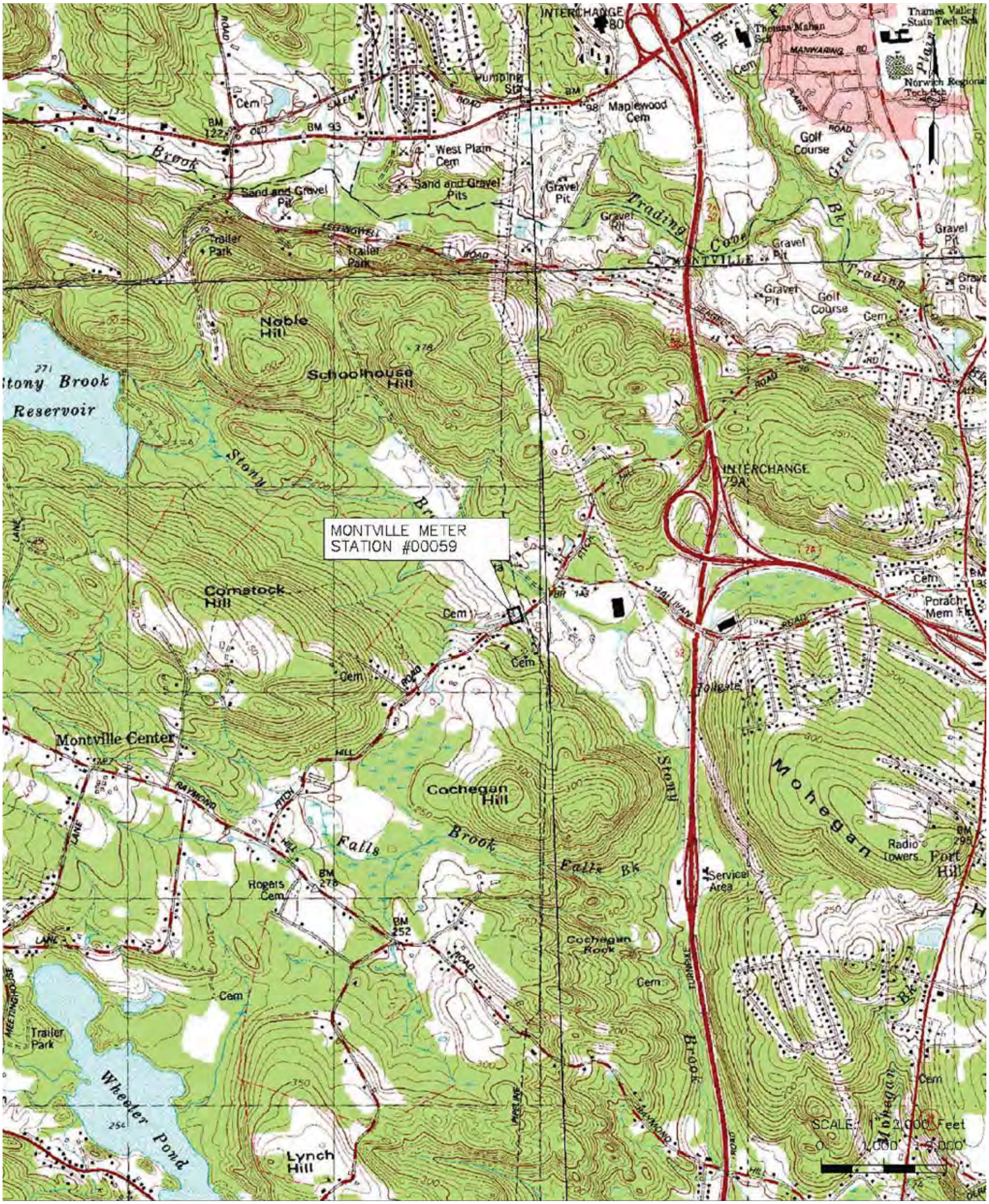
Facility Location Maps
Salem Pike M&R Station



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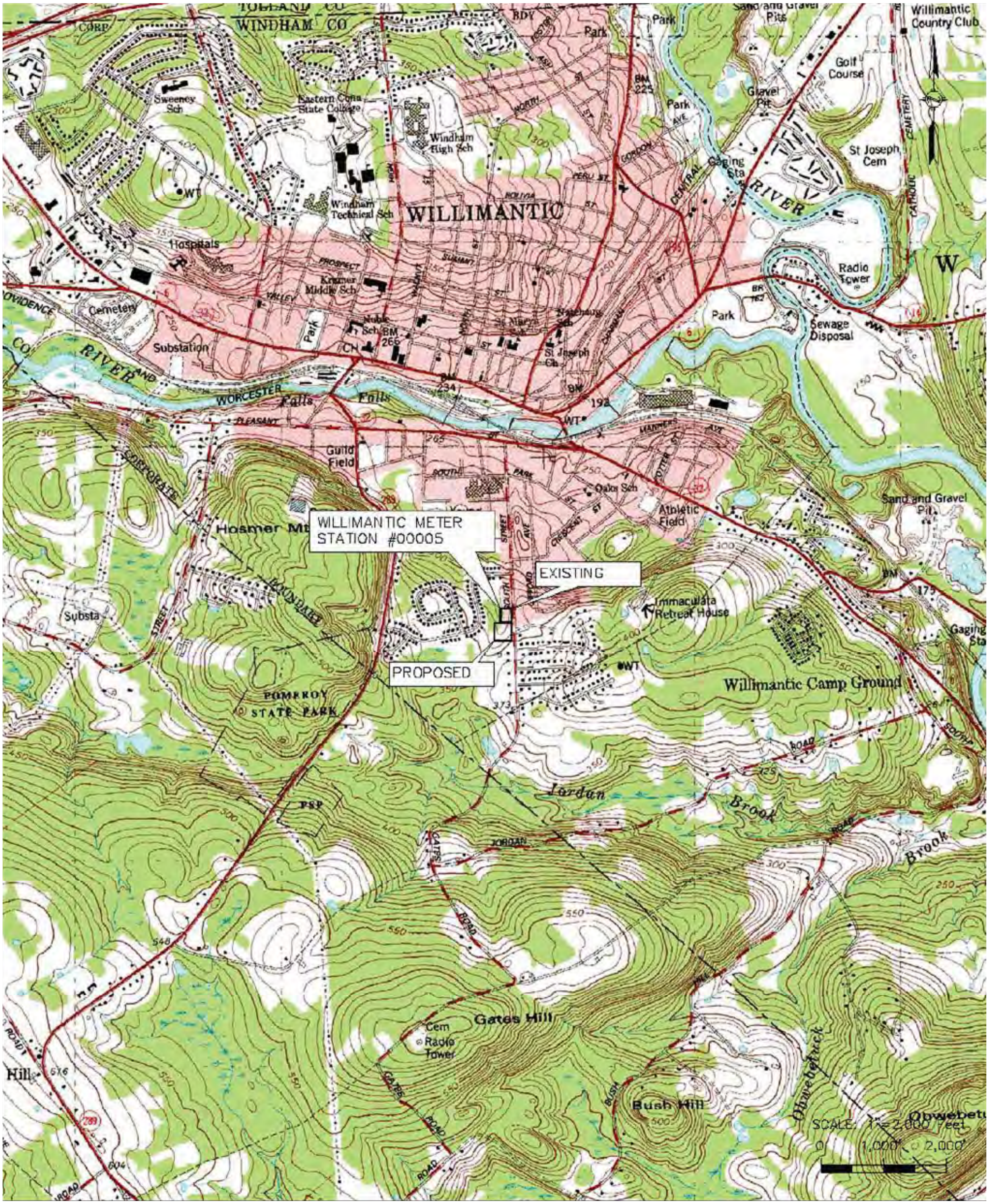
Facility Location Maps
Montville M&R Station



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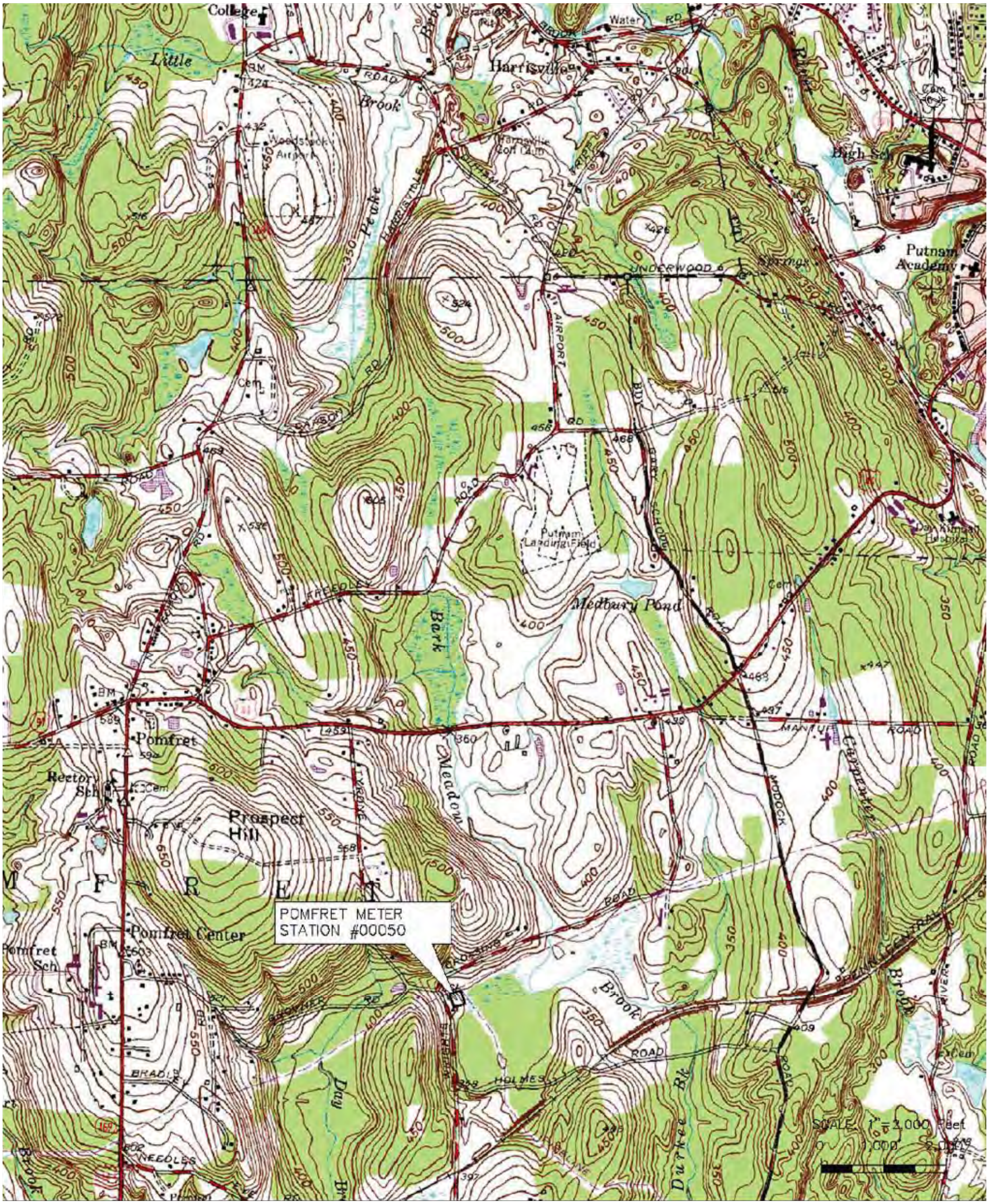
AIM Project

Facility Location Maps

Willimantic M&R Station



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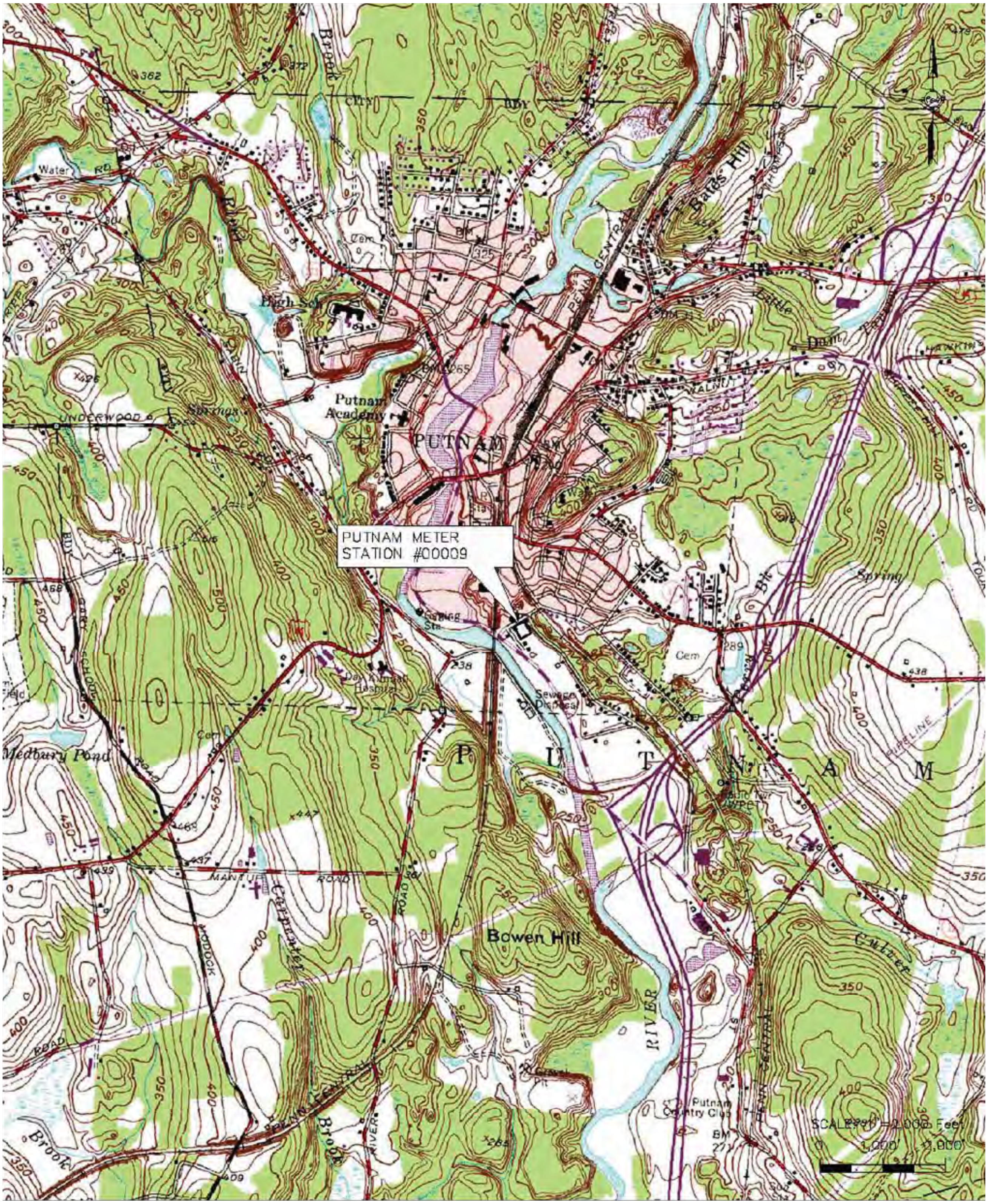
AIM Project

Facility Location Maps

Pomfret M&R Station



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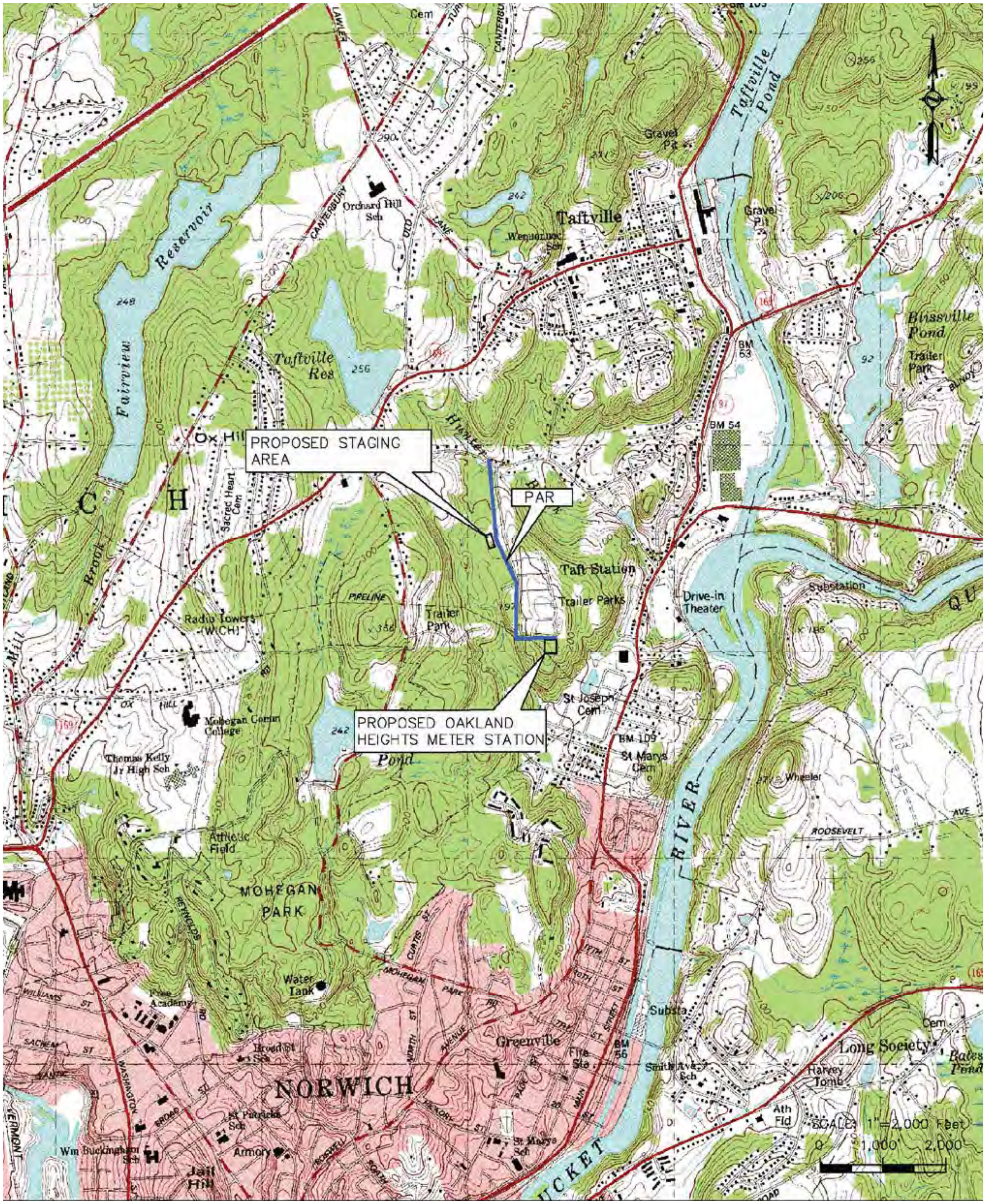
AIM Project

Facility Location Maps

Putnam M&R Station



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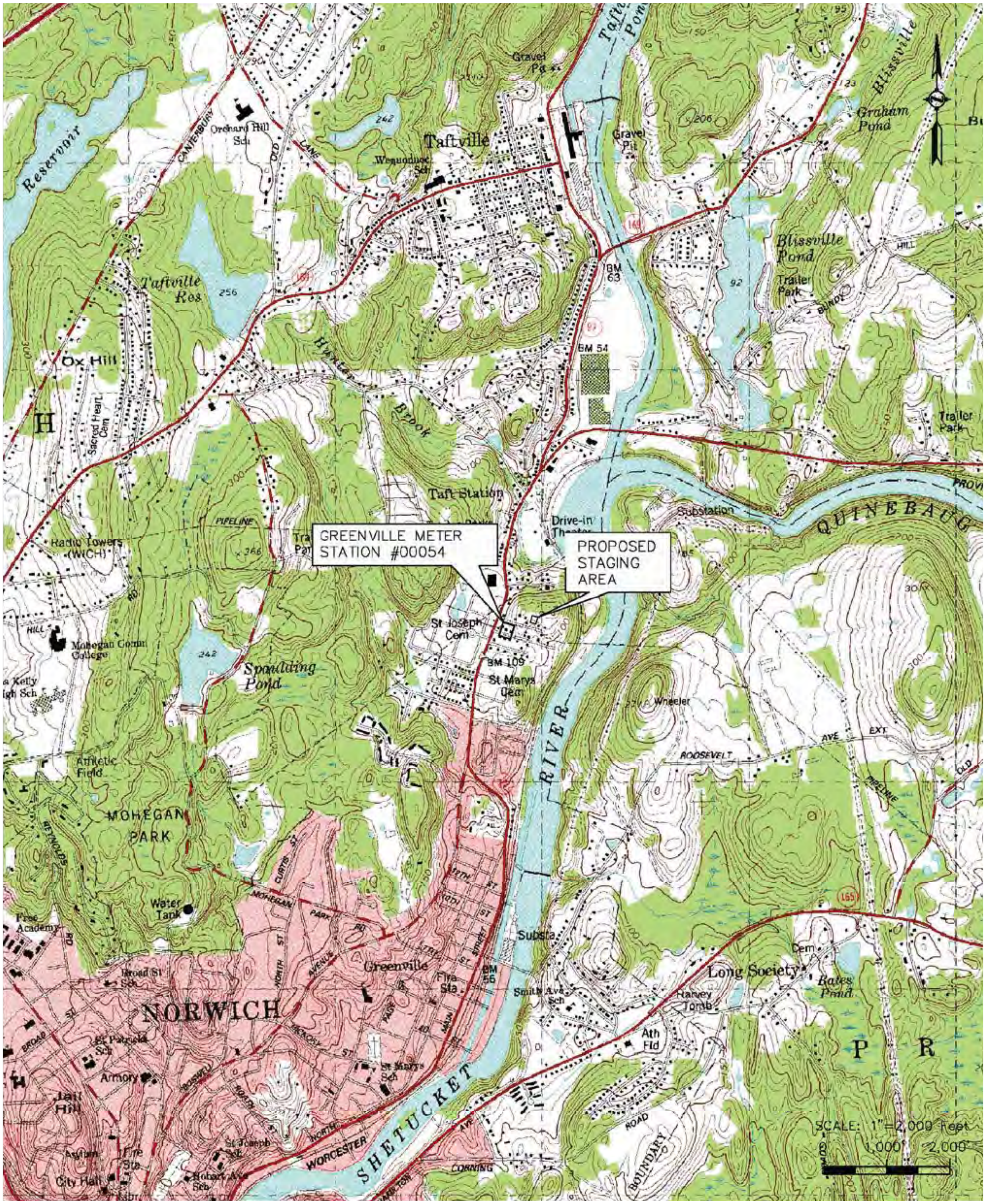
AIM Project

Facility Location Maps

Oakland Heights M&R Station



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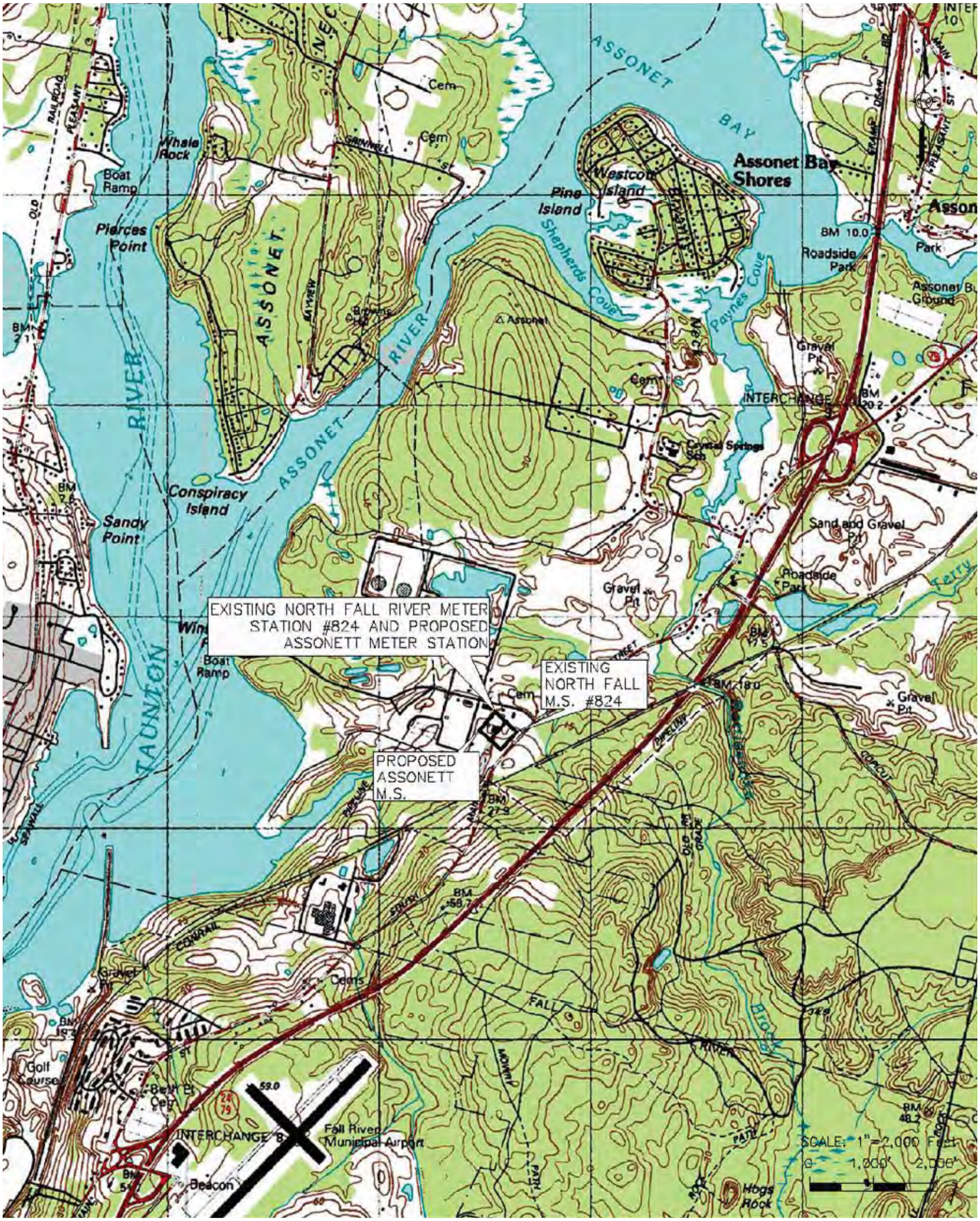
AIM Project

Facility Location Maps

Greenville M&R Station



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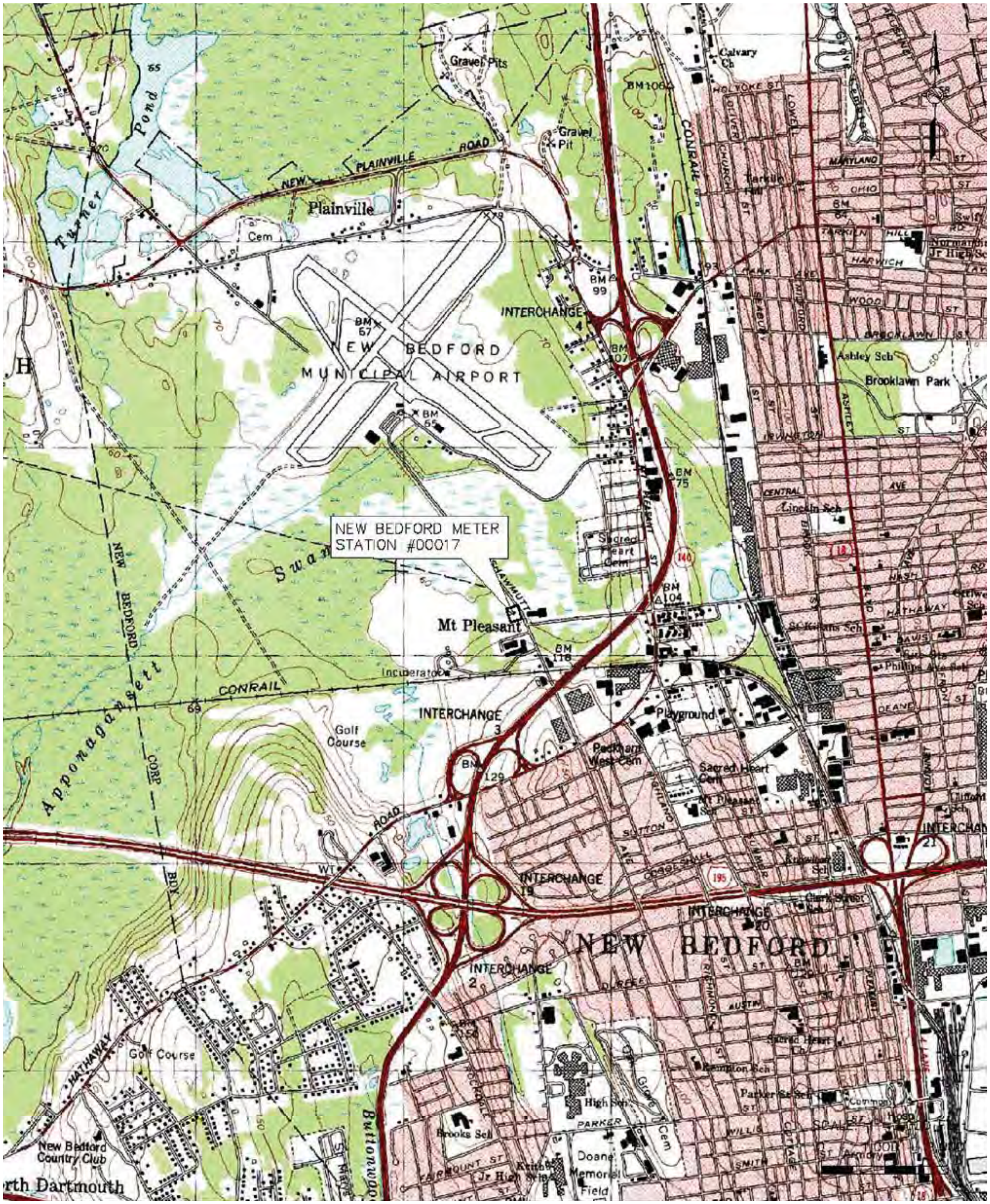
AIM Project

Facility Location Maps

North Fall River and Assonett M&R Stations



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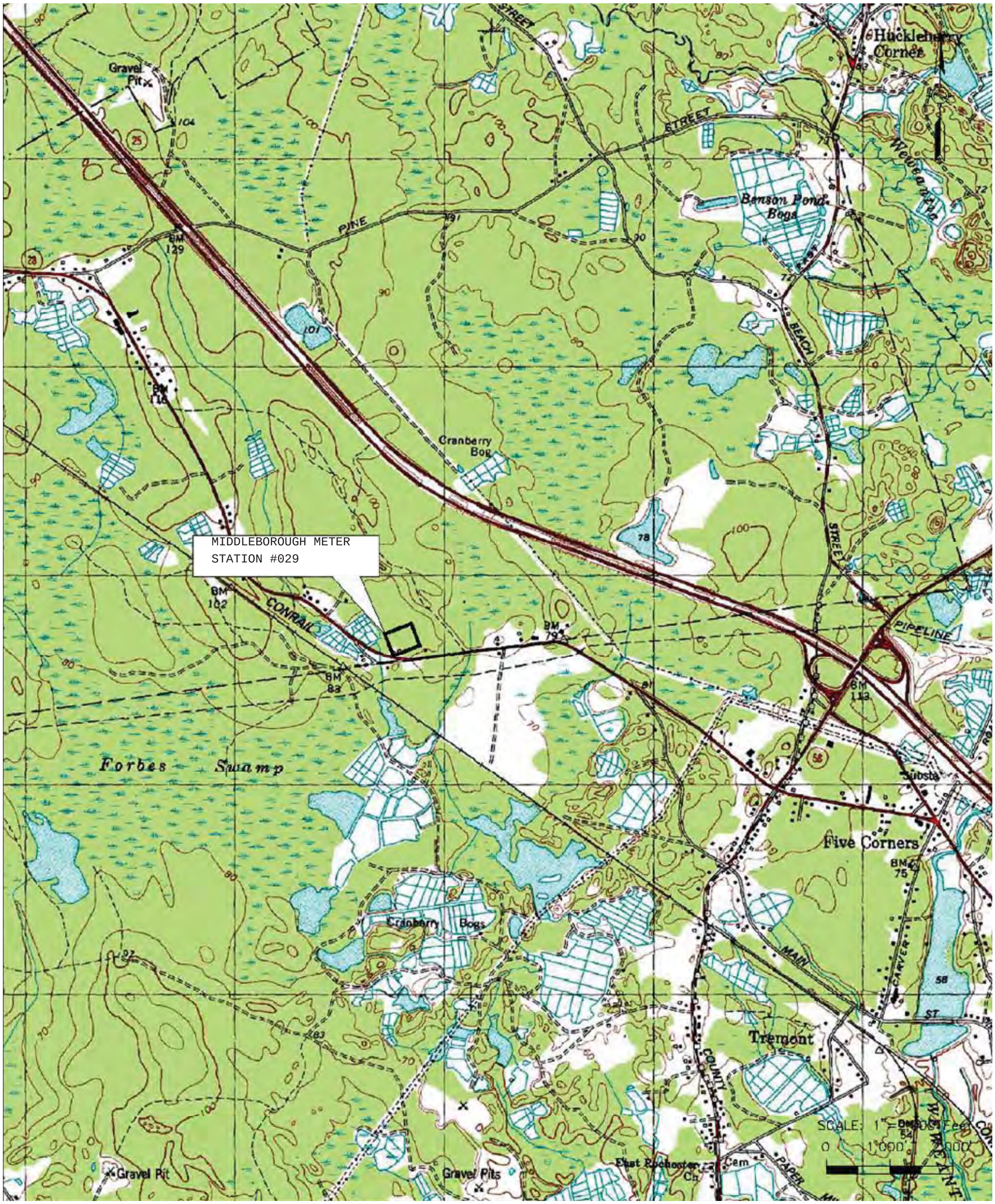
AIM Project
Facility Location Maps
New Bedford M&R Station



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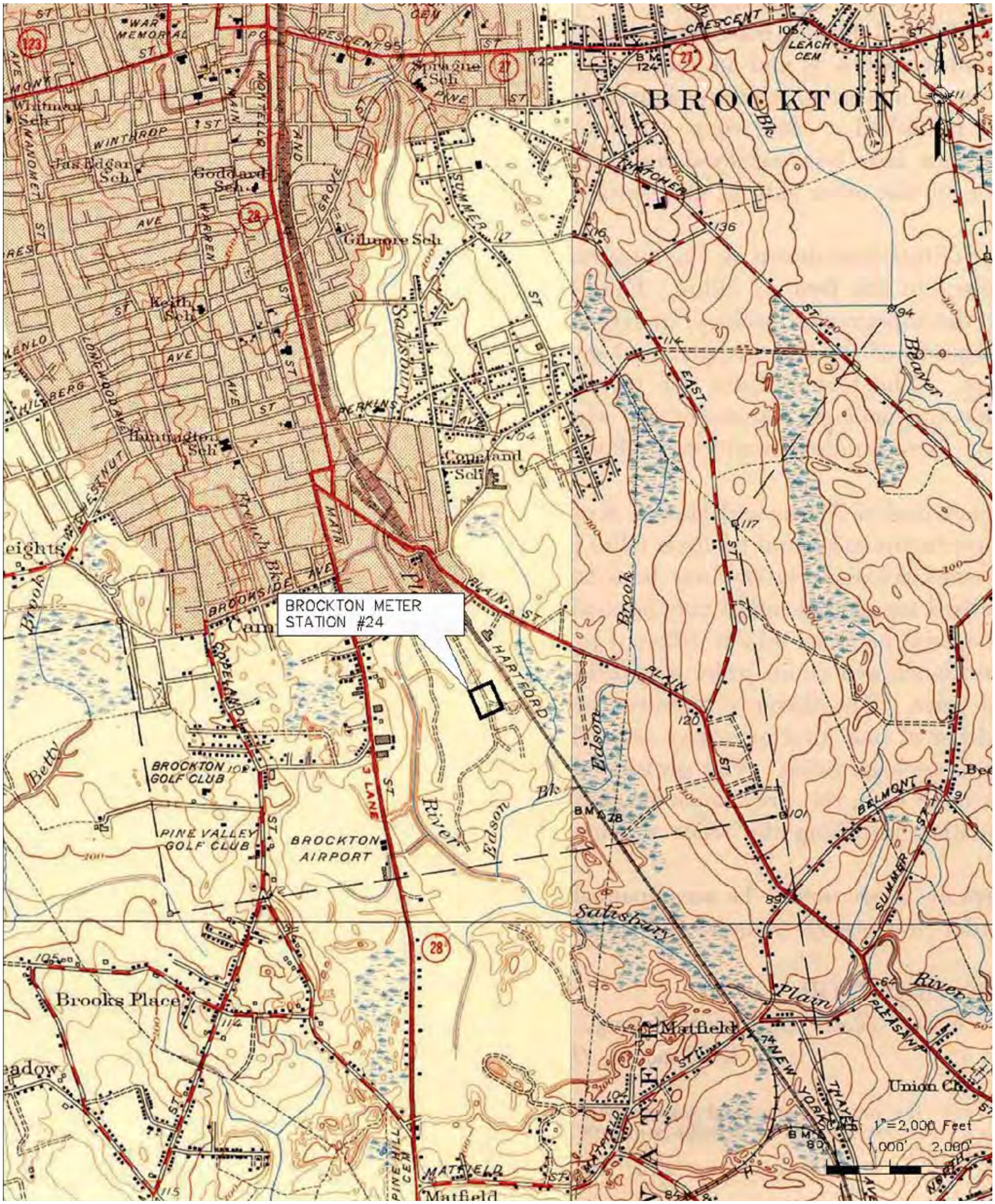
AIM Project

Facility Location Maps

Middleborough M&R Station



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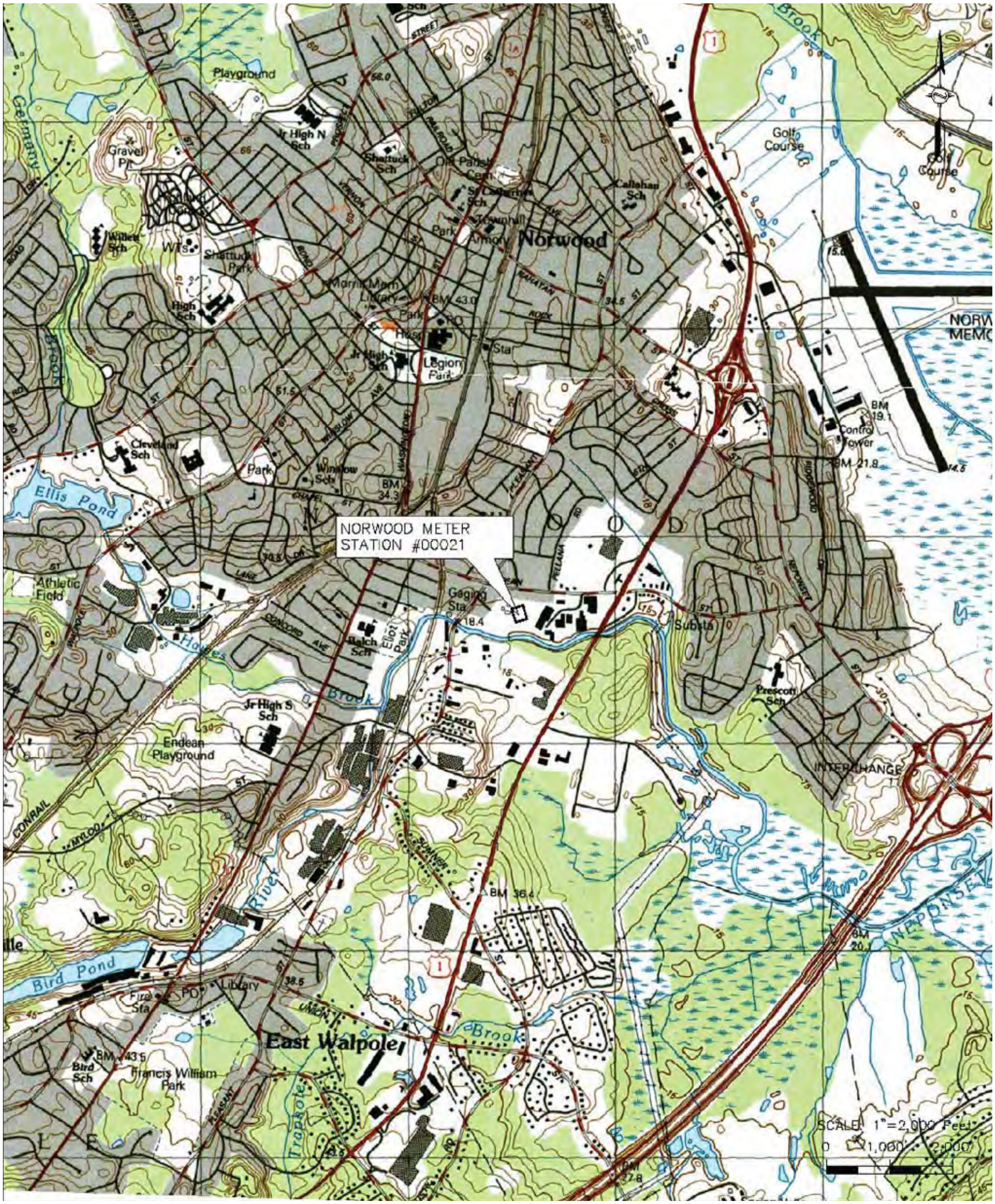
AIM Project

Facility Location Maps

Brockton M&R Station



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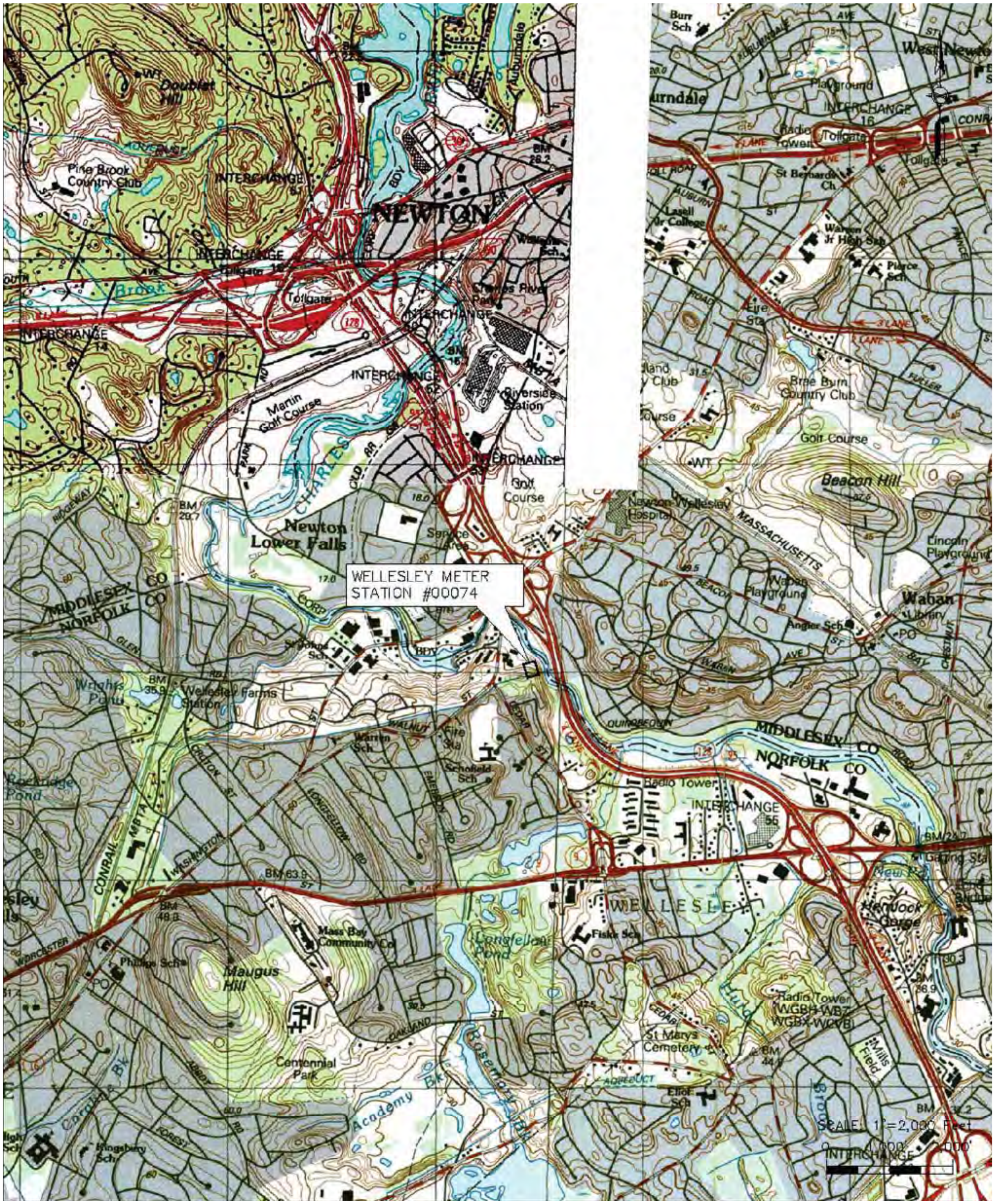
Facility Location Maps
Norwood M&R Station

Appendix B
AIM Project
Facility Location Maps
Needham M&R Station



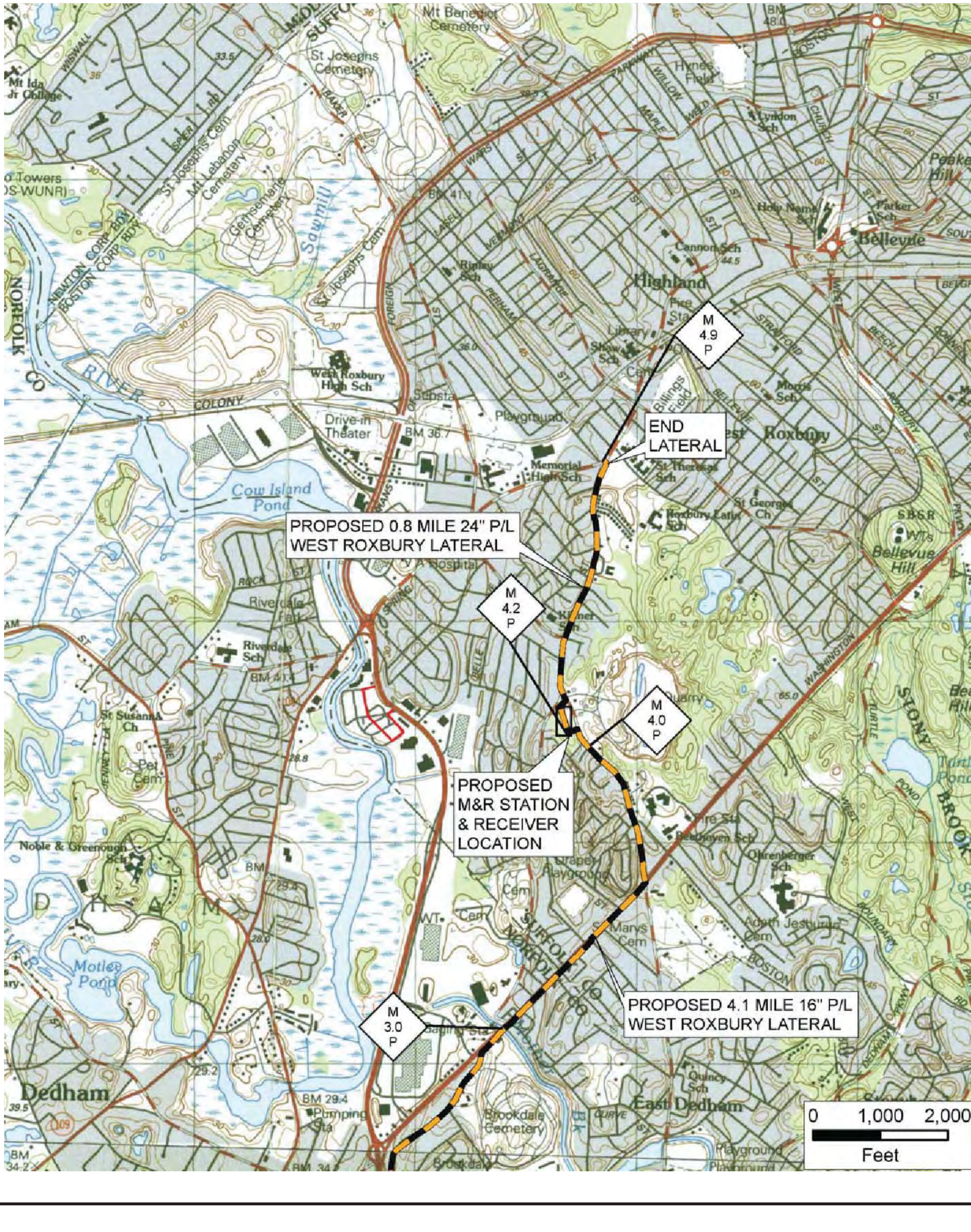
Appendix B

AIM Project

Facility Location Maps

Wellesley M&R Station

Appendix B
AIM Project
Facility Location Maps
Mystic M&R Station



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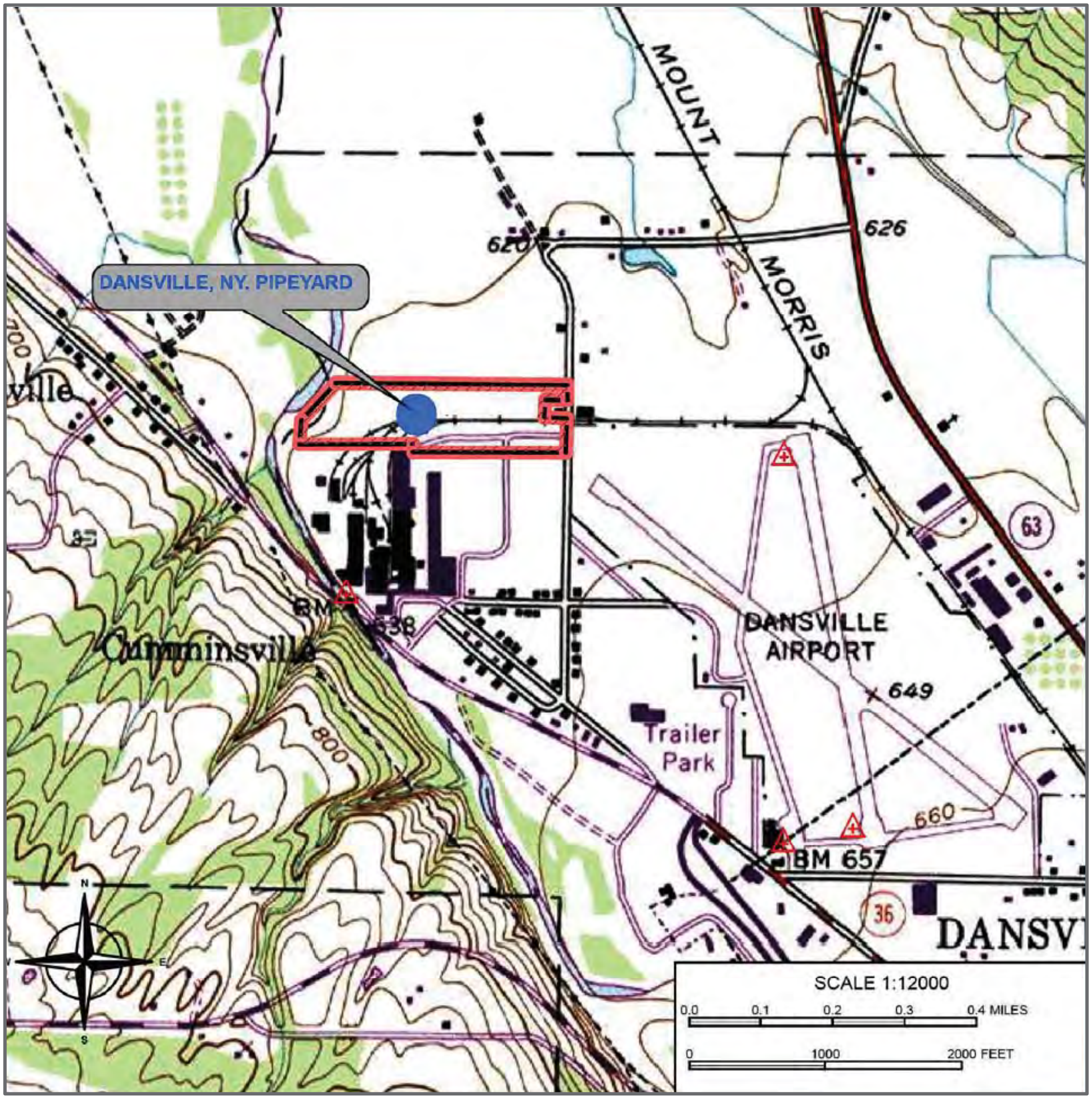
AIM Project

Facility Location Maps

West Roxbury M&R Station



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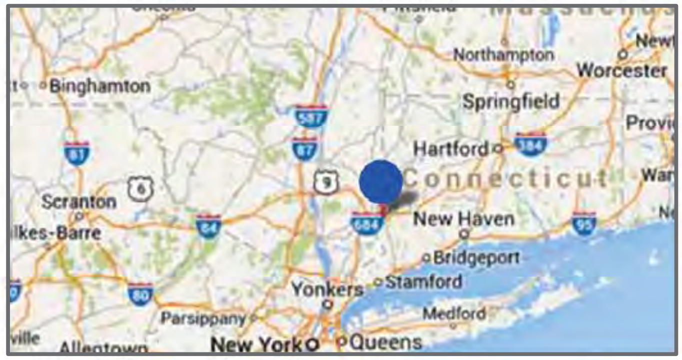
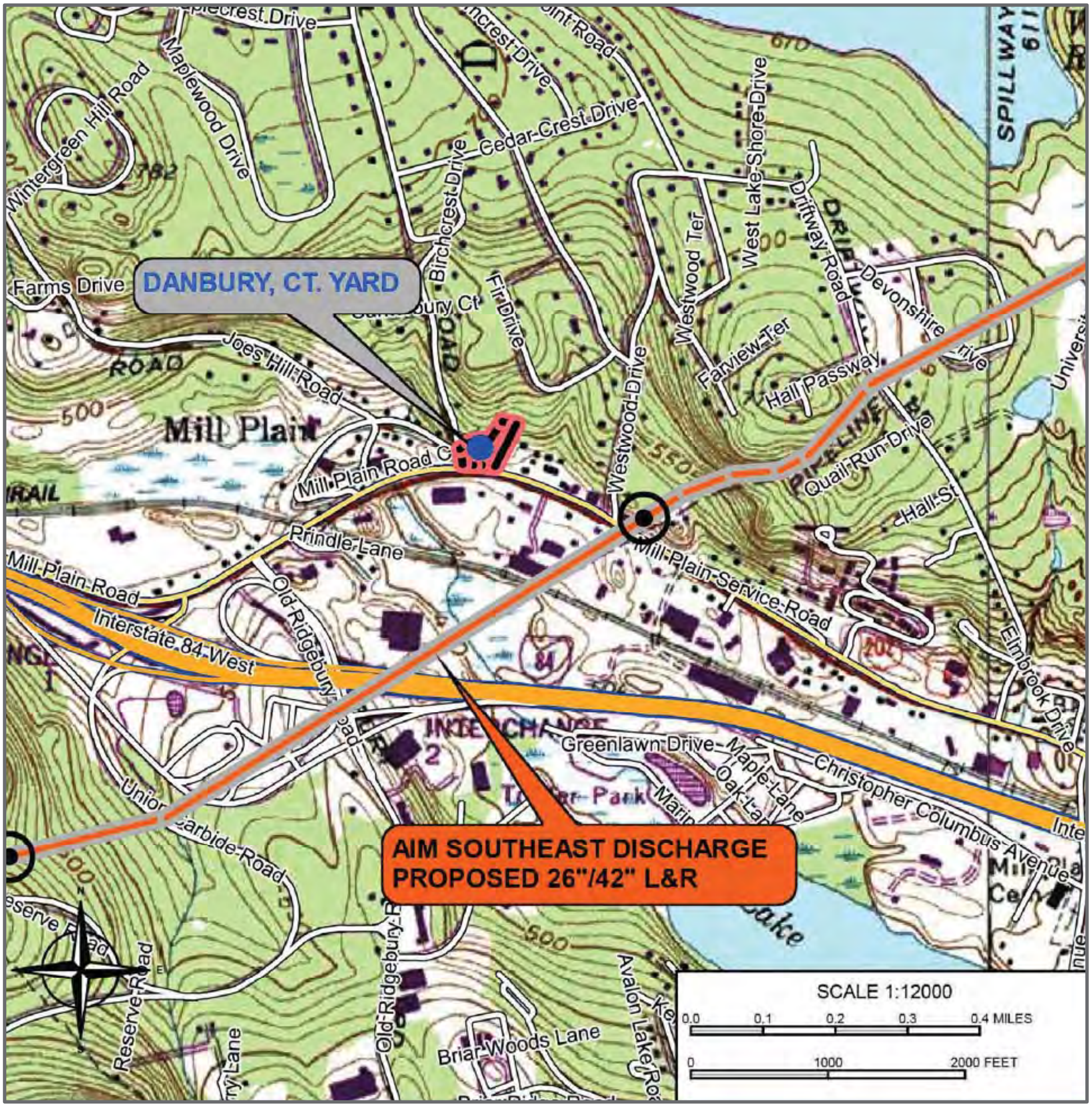
Facility Location Maps
Dansville Yard





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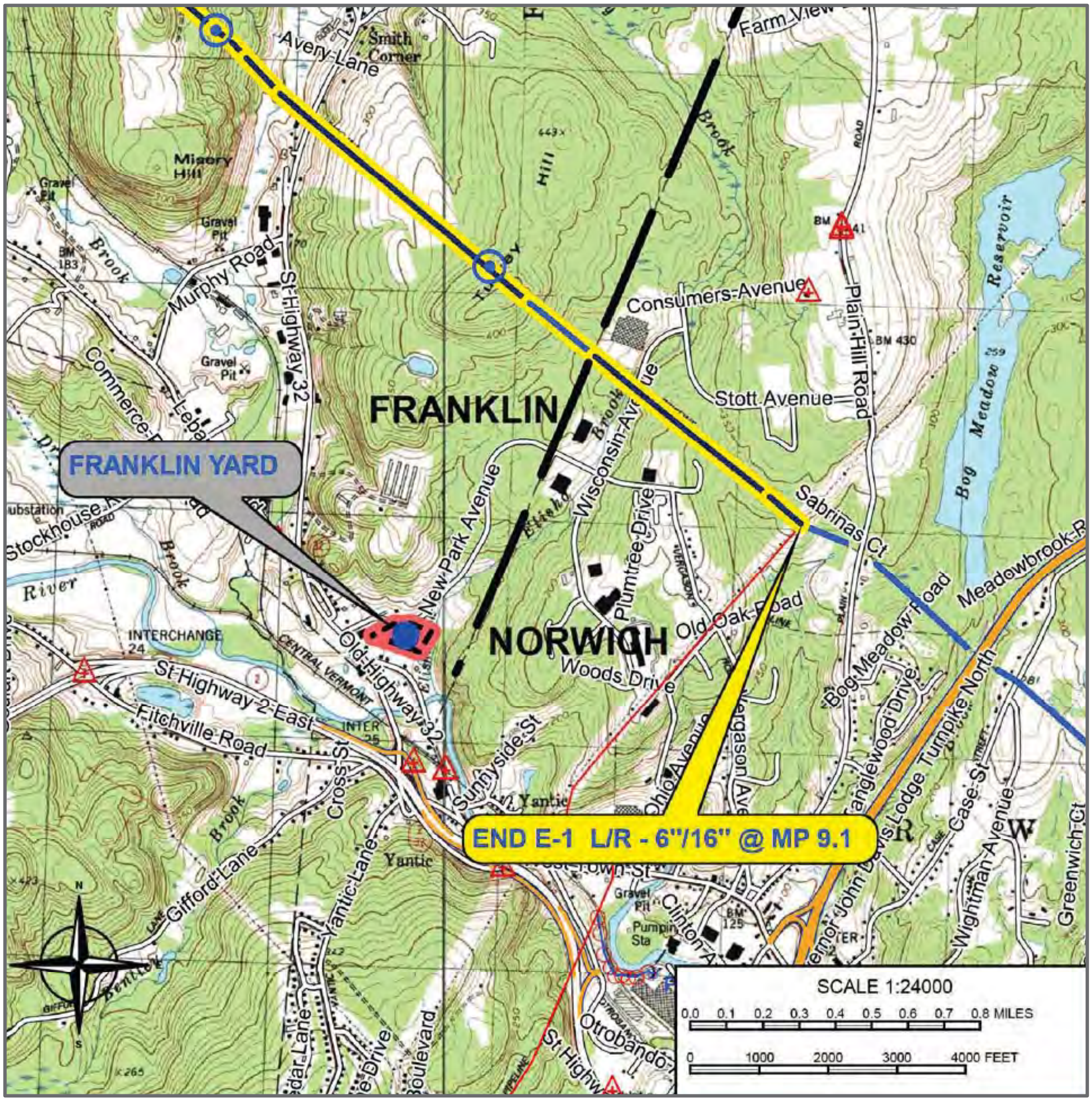
AIM Project

Facility Location Maps

Danbury Yard



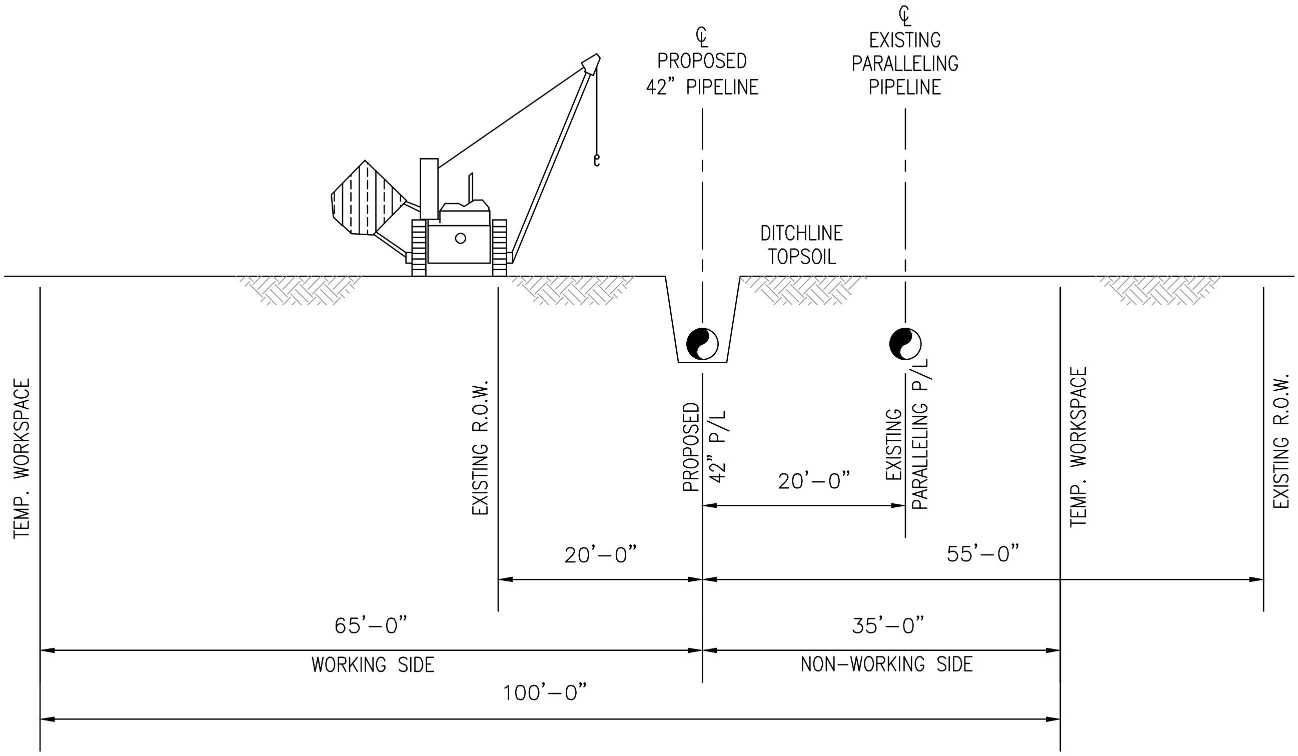
Appendix B

AIM Project

Facility Location Maps

Franklin Yard

TYPICAL RIGHT-OF-WAY CONFIGURATIONS



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DRN. BY: APW	SCALE: N.T.S.	DWG. NO.: ES–0001	

I.G. #

Spectra Energy

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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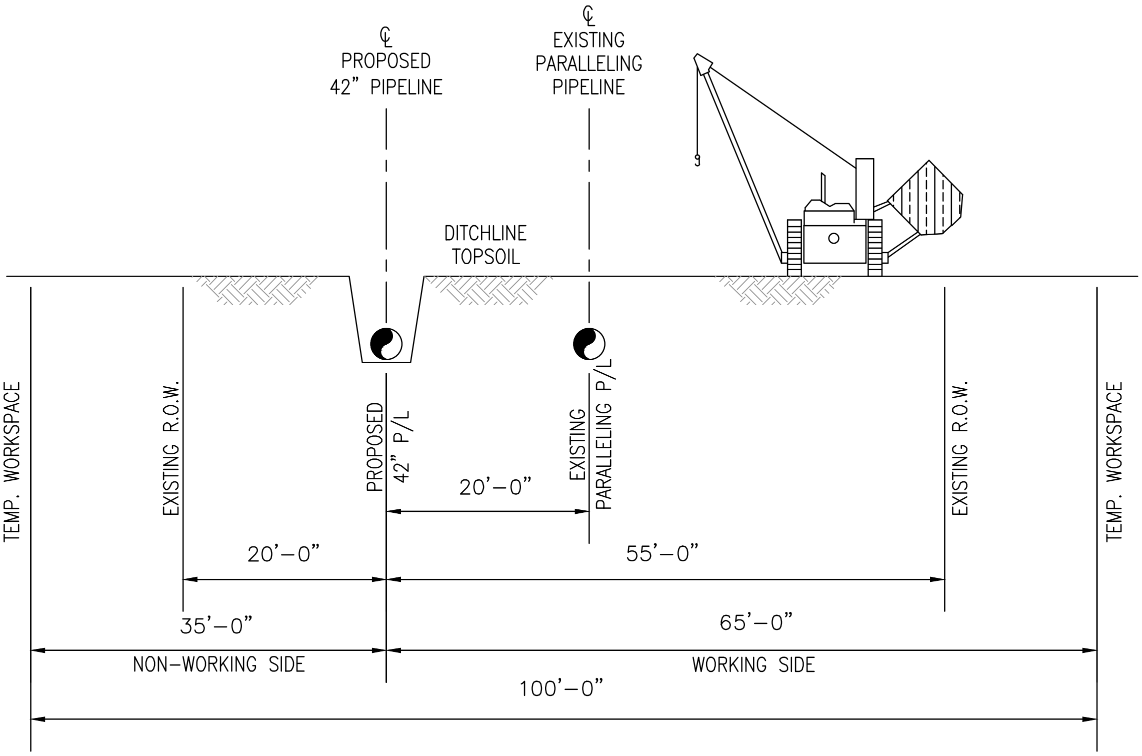

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DRN. BY: APW	SCALE: N.T.S.	DWG. NO.: ES–0002		

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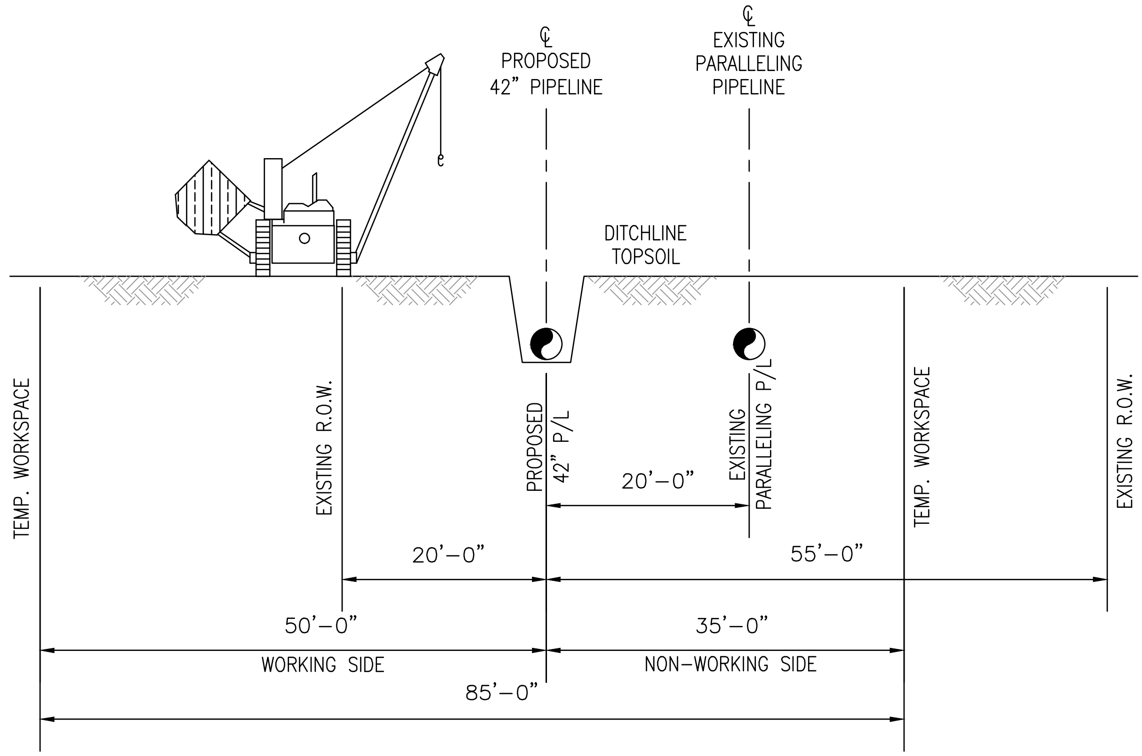

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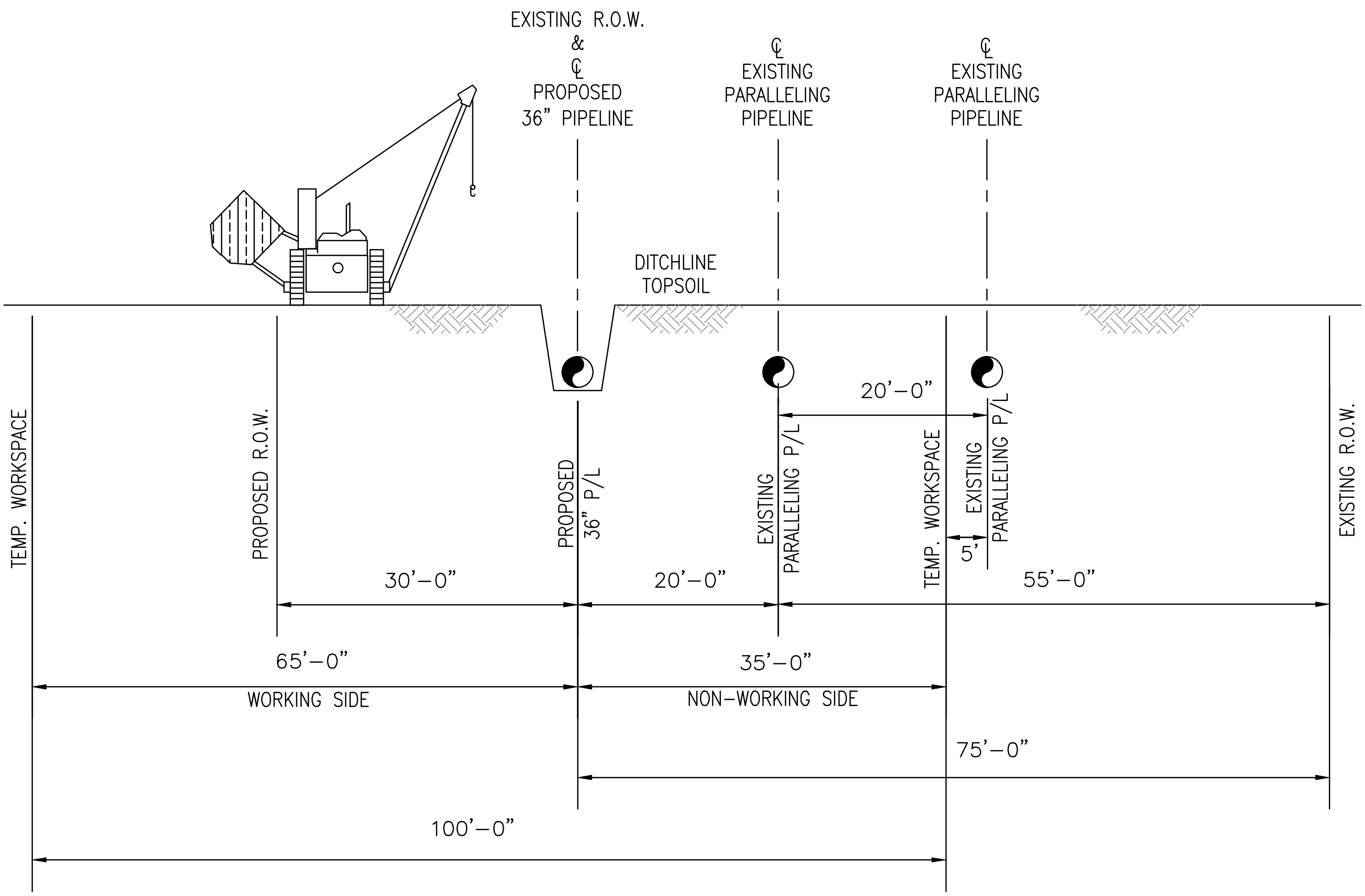

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Spectra Energy

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400

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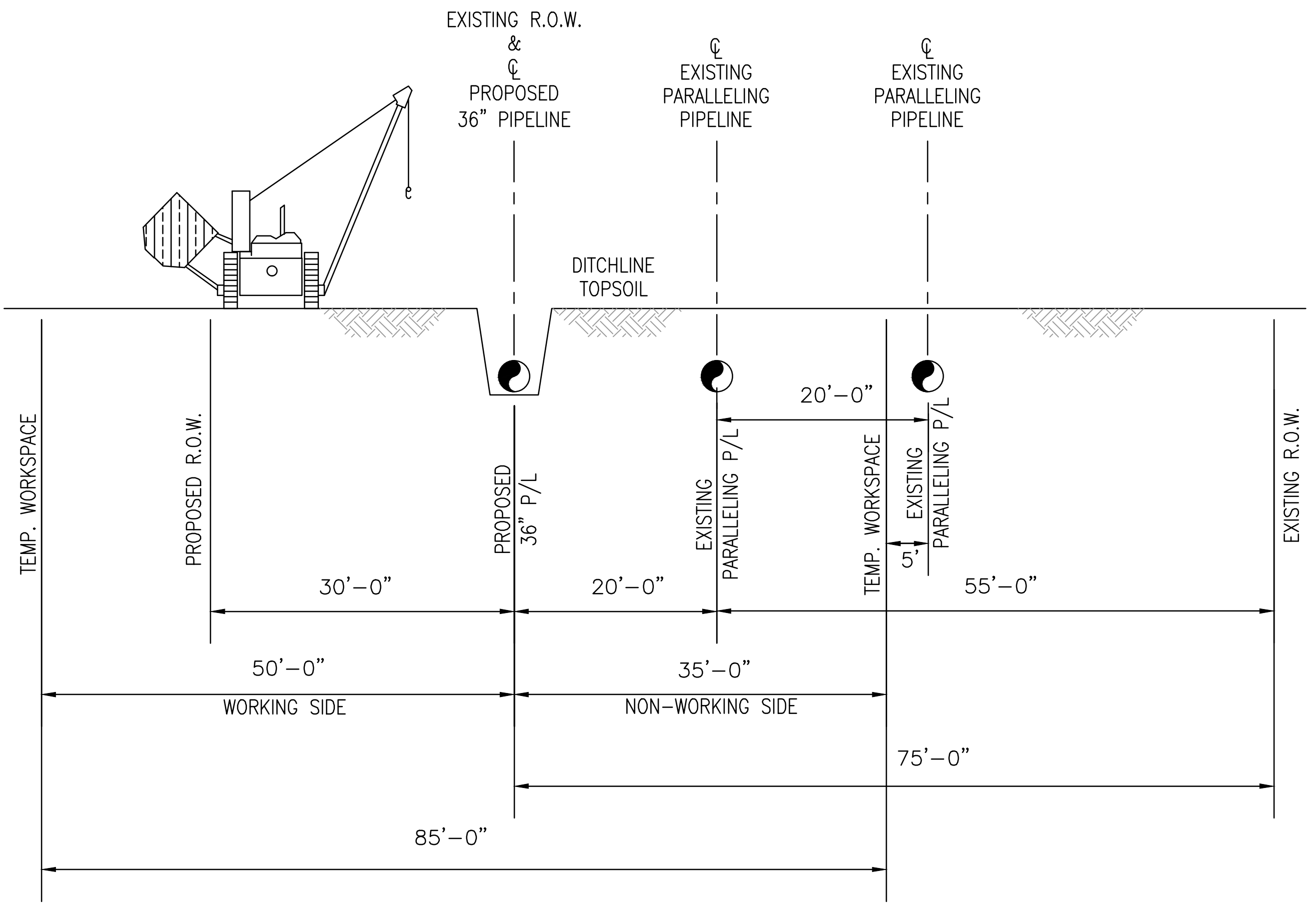

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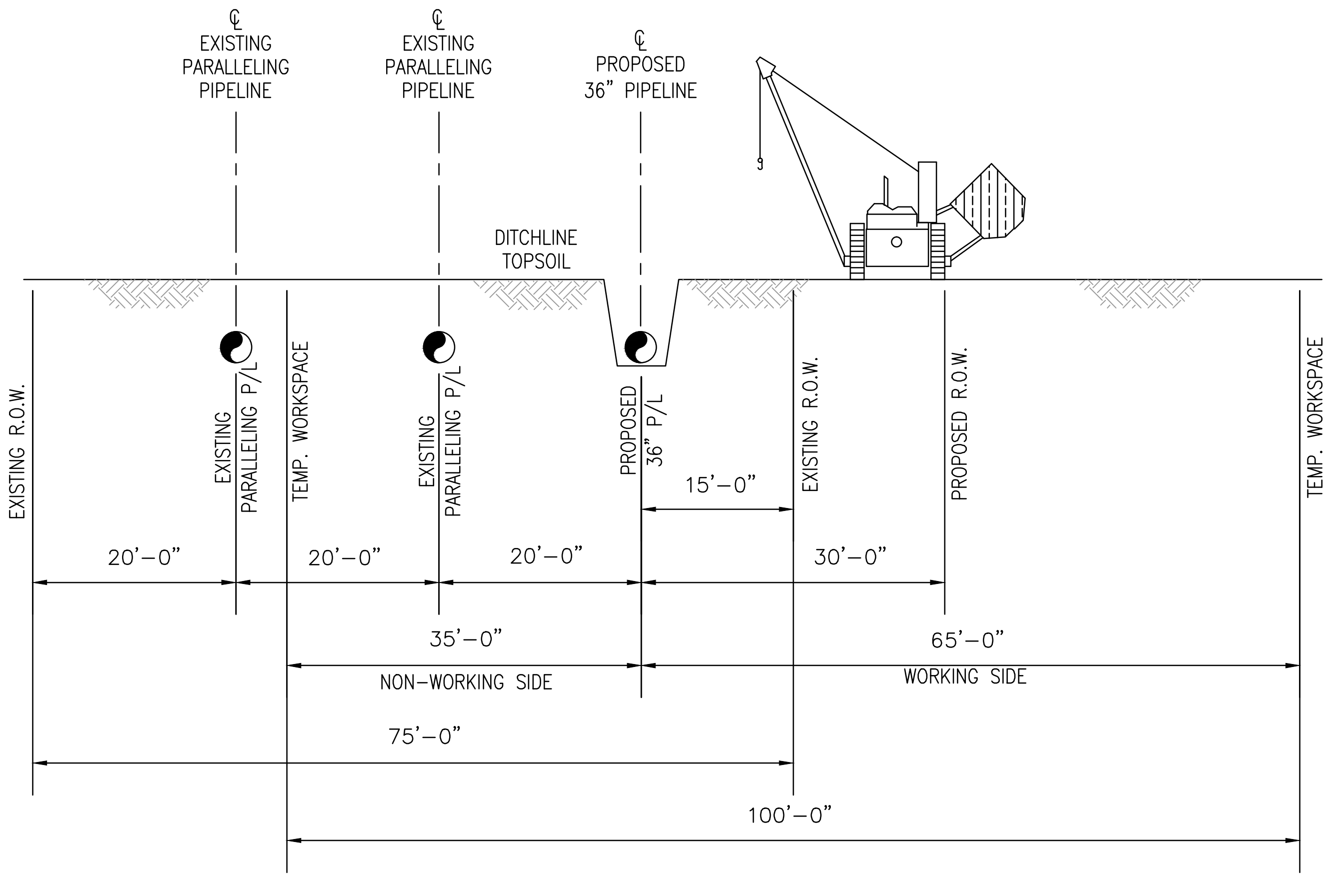
Spectra Energy

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400



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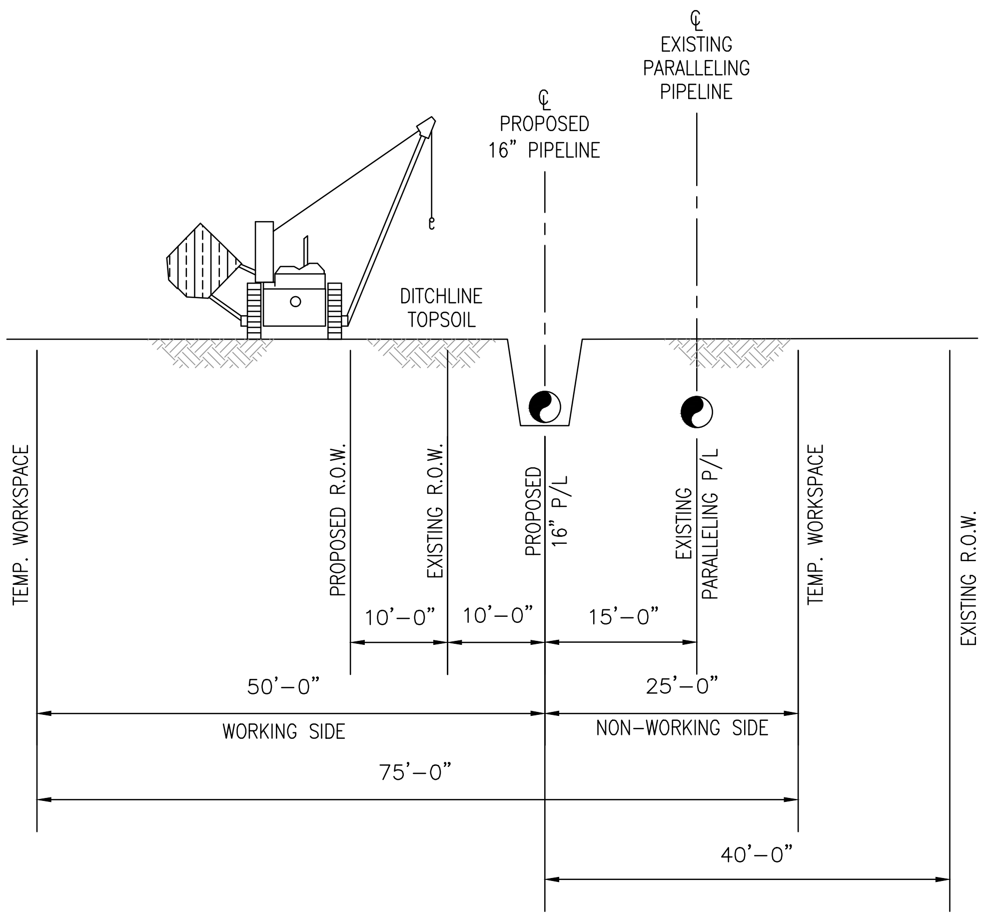
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400



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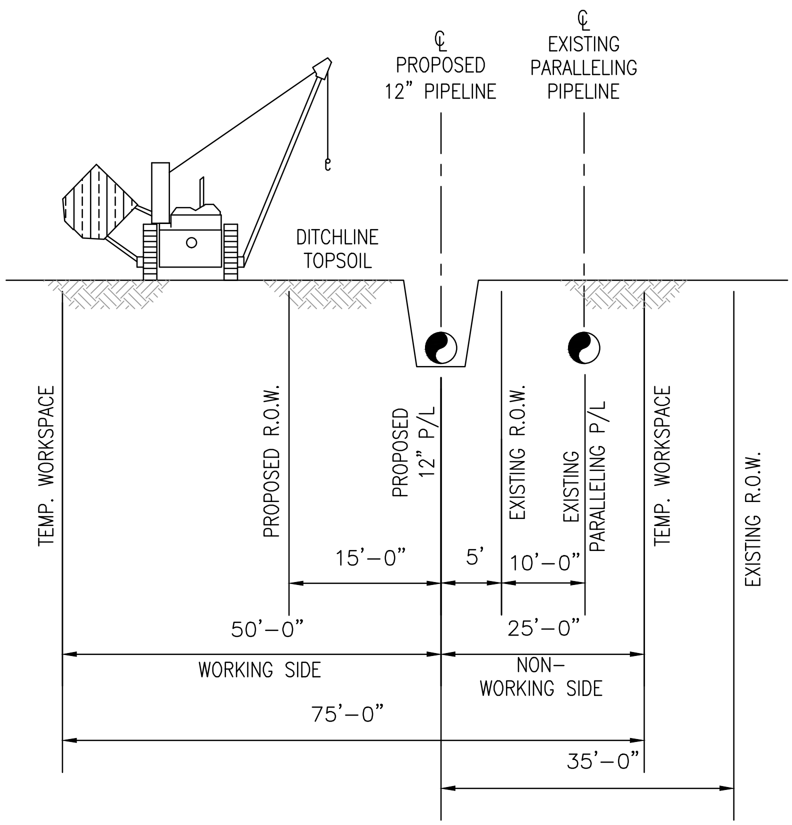
Spectra Energy

Algonquin Gas Transmission, LLC
5400 Westheimer Ct. Houston, TX 77056-5310 713 / 627-5400



TYPICAL 75' PIPELINE CONSTRUCTION
R.O.W. CONFIGURATION FOR 12" PIPELINE

LOC.: N/A			REV.: C
CKD. BY: CCW	ENG.: CCW	DATE: 10/24/13	W.O.
DRN. BY: APW	SCALE: N.T.S.	DWG. NO.: ES–0008	

Spectra Energy

Algonquin Gas Transmission, LLC
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I.G. #

R:\101490 – Spectra AIM\08 Deliverables WIP\04.11 Pipeline\04.11.665 PL Permits\8100 Series – Road permits\ES–0008.dwg – PLOT TIME: 10/24/2013 2:50 PM

APPENDIX C

ADDITIONAL TEMPORARY WORKSPACE TABLE

TABLE C-1

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
HAVERSTRAW TO STONY POINT TAKE-UP AND RELAY							
Rockland County, NY							
0.0	Right	39 x 200	0.16	F, O	Valve site 13B	No	NA
0.0	Right	140 x 153	0.49	F, I, O	Valve site 13B	No	NA
0.3	Left	81 x 305	0.33	I, O R	Waterbody and road crossing	No	NA
0.6	Left	50 x 100	0.12	F	Wetland	No	NA
0.7	Left	50 x 415	0.47	F	Wetland	No	NA
0.9	Left	50 x 350	0.40	F	Wetland	No	NA
1.1	Left	65 x 450	0.49	F, I, R	Wetland/waterbody	Yes	B13-RLR-W3; B13-RLR-S3D; B13 RLR-S3I; B13-RLR-S3J
1.2	Left	30 x 450	0.33	F	Road crossing	No	NA
1.2	Left	55 x 180	0.23	F, I, R	Road crossing	No	NA
1.7	Left	30 x 1135	0.69	F, O, R	Wetland and stream crossing	No	NA
2.0	Right	10 x 135	0.03	F	Wetland	No	NA
2.2	Left	75 x 750	0.92	F, I, O, R	Road crossing (Palisades Interstate Parkway) and wetland	Yes	B13-RLR-S6
2.2	Right	40 x 450	0.37	F, I, O, R	Road crossing (Palisades Interstate Parkway) and wetland	No	NA
2.7	Right	20 x 760	0.37	O, R	Wetland	No	NA
3.0	Left	90 x 700	0.26	F, I, O, R	Highway 210 crossing and wetland	Yes	B13-RLR-W9; B13-RLR-W10; B13-RLR-S10A
3.0	Right	65 x 600	0.09	F, I, O, OW	Highway 210 crossing and wetland	Yes	B13-RLR-W10; B13-RLR-S10
STONY POINT TO YORKTOWN TAKE-UP AND RELAY							
Rockland County, NY							
0.1	Left	35 x 200	0.16	F	Overhead transmission lines	No	NA
0.4	Left	35 x 100	0.08	F	Stream crossing	No	NA
0.4	Left	35 x 185	0.12	F, R	Stream crossing	Yes	A13-SPLR-S1
0.4	Right	90 x 160	0.18	I, R	Road crossing	No	NA
0.7	Right	70 x 125	0.10	R	Road crossing	No	NA
0.7	Left	80 x 125	0.18	F, I, R	Road crossing	No	NA
1.3	Left	25 x 100	0.06	F, O, R	Road crossing	No	NA
1.4	Right	50 x 120	0.13	F, I, R	Road crossing	No	NA
1.4	Left	50 x 125	0.12	F, I	Road crossing	No	NA
1.7	Right	50 x 280	0.28	F, I, O	Road crossing	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
2.5	Left	20 x 125	0.06	F, R	MLV cross over piping and launcher facility	No	NA
2.6	Left	30 x 100	0.07	F, O	MLV cross over piping and launcher facility	No	NA
2.9	Right	70 x 500	0.39	F, I	Road crossing	No	NA
3.0	Left	125 x 300	0.84	F, I	HDD entry point	Yes	A14-SPLR-W101
3.0	Left	45 x 80	0.08	F, I	Access to HDD entry point	No	NA
3.0	Right	190 x 360	1.59	F, I	HDD entry point	No	NA
Westchester County, NY							NA
3.9	Left	190 x 460	2.27	F, I, OW	HDD exit point	No	NA
3.9	Right	185 x 555	2.69	F, I, OW	HDD exit point	No	NA
4.1	Right	1265 x 150	4.50	F	HDD pullback	No	NA
4.2	Left	245 x 370	2.12	F, I	Staging equipment for HDD work; overhead transmission lines	No	NA
4.5	Right	35 x 305	0.22	F, I	Wetlands and road crossing	No	NA
4.5	Right	705 x 510	6.38	F, I	Wetlands and road crossing	No	NA
4.8	Left	40 x 255	0.19	F, I	Wetlands and road crossing	No	NA
5.1	Right	20 x 100	0.05	F	Wetlands	No	NA
5.2	Right	20 x 195	0.10	F	Wetlands	No	NA
5.4	Right	35 x 100	0.08	F, O	Wetland	No	NA
5.5	Left	100 x 100	0.27	F, O	Road crossing	No	NA
5.5	Left	65 x 165	0.23	F, I, O	Road crossing	No	NA
5.6	Left	35 x 100	0.08	F	Wetland	Yes	B13-SPLR-W17
5.9	Right	20 x 330	0.15	I, O, R	Wetland and road crossings	Yes	B13-SPLR-W2
5.9	Left	255 x 300	0.56	F, R	Wetland	Yes	B13-SPLR-W2
5.9	Right	35 x 740	0.64	F, O	Wetland	Yes	B13-SPLR-W2; B13-SPLR-S2
6.0	Left	35 x 100	0.08	F	Wetland	No	NA
6.3	Left	35 x 100	0.08	F	Wetland	No	NA
6.4	Left	60 x 265	0.13	F	Road crossing	No	NA
6.6	Right	30 x 320	0.22	F, R	Avoid residence	No	NA
6.7	Left	35 x 230	0.18	F, I, R	Road crossing	Yes	B13-SPLR-W7
6.8	Left	35 x 100	0.08	F	Wetland	No	NA
6.9	Left	35 x 100	.08	F	Wetland	No	NA
7.0	Right	95 x 460	0.45	F	Wetland	No	NA
7.4	Left	35 x 200	0.16	F, O	Wetland	Yes	B13-SPLR-W12
7.5	Left	35 x 100	0.09	F, O	Wetland	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
7.6	Left	35 x 100	0.08	F, O	Wetland	No	NA
7.9	Left	35 x 525	0.41	F, O	Wetland	No	NA
8.1	Right	30 x 300	0.22	F, I	Provide access from TAR 7.6	No	NA
8.2	Left	35 x 100	0.08	I	Wetland	No	NA
8.3	Left	35 x 100	0.08	I	Wetland	No	NA
8.3	Left	35 x 100	0.08	A, I	Wetland	No	NA
8.4	Left	35 x 100	0.08	F	Wetland	No	NA
8.5	Left	50 x 150	0.15	F, I	Wetland and road crossing	Yes	A13-SPLR-W2
8.6	Left	50 x 100	0.11	F	Wetland	Yes	A13-SPLR-W2
8.8	Left	50 x 375	0.43	F	Wetland	Yes	A13-SPLR-W2; B13-SPLR-W18
8.9	Left	50 x 285	0.31	F	Wetland	No	NA
9.2	Right	90 x 165	0.18	F, I, R	Road crossing	No	NA
9.2	Left	30 x 160	0.11	F, I	Road crossing	Yes	A13-SPLR-W4
9.4	Right	45 x 180	0.13	I, R	Wetland and road crossing	No	NA
9.5	Right	50 x 100	0.11	F, R	Road crossing	No	NA
9.5	Right	50 x 100	0.11	F	Wetland	No	NA
9.6	Left	30 x 205	0.14	F, I, O, R	Wetland and road crossing	Yes	B13-SPLR-W43; B13-SPLR-W206
9.8	Right	30 x 170	0.06	F, I, R	Road crossing	No	NA
9.8	Right	105 x 255	0.39	R	Road crossing	No	NA
9.9	Left	155 x 280	0.47	F, I, R	Wetland	Yes	B13-SPLR-W20
10.1	Left	105 x 275	0.48	I, R	Road crossing	No	NA
10.2	Right	80 x 320	0.30	F, I, R	Road crossing	No	NA
10.3	Right	95 x 730	0.45	F, I, R	Wetland and road crossing	Yes	B13-SPLR-S21A; B13-SPLR-S21B
10.4	Left	30 x 210	0.15	I	Dismantle existing deck for safety reasons	No	NA
10.5	Right	80 x 130	0.07	I	Road crossing	No	
10.5	Left	30 x 220	0.15	F, I, O	Wetland and road crossing	Yes	B13-SPLR-W22
10.7	Left	65 x 155	0.11	F, O, R	Wetland and road crossing	Yes	B13-SPLR-W23
10.9	Left	35 x 100	0.08	F	Wetland	No	NA
11.0	Right	20 x 150	0.07	I, O	Wetland and road crossing	Yes	B13-SPLR-W41
11.1	Left	35 x 135	0.11	F, I	Road crossing	No	NA
11.1	Left	35 x 100	0.08	F	Wetland	No	NA
11.2	Left	35 x 100	0.09	F	Wetland	No	NA
11.5	Left	35 x 100	0.08	F	Wetland	No	NA
11.6	Left	35 x 100	0.08	F	Wetland	No	NA
11.7	Left	35 x 100	0.08	F	Wetland	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
11.8	Left	35 x 100	0.08	F	Wetland	No	NA
12.0	Left	35 x 100	0.08	F	Wetland	No	NA
12.0	Left	35 x 100	0.08	F	Wetland	No	NA
12.3	Left	85 x 355	0.66	F, I	Road crossing	No	NA
12.3	Right	10 x 355	0.09	F, I, O	Road crossing	No	NA
SOUTHEAST TO MLV-19 TAKE-UP AND RELAY							
Fairfield County, CT							
0.4	Left	35 x 725	0.58	F, I	Road crossing(s)	Yes	B13-SELR-W8
0.6	Left	35 x 630	0.50	F, I	Wetland and road crossing	No	NA
0.7	Left	35 x 180	0.15	F	Wetland	No	NA
1.0	Right	50 x 560	0.60	F, I, O	Wetland and road crossing	No	NA
1.1	Right	50 x 260	0.29	F	Wetland and road crossing	No	NA
1.4	Left	45 x 2050	1.53	F, I	Staging area for HDD entry point (I-84, Still River, Mill Plain Road)	No	NA
1.5	Right	175 x 1180	3.09	I, O	Staging area for HDD entry point (I-84, Still River, Mill Plain Road)	No	NA
1.9	Left	120 x 215	0.29	I	Staging area for HDD exit point (I-84, Still River, Mill Plain Road)	No	NA
1.9	Right	315 x 235	0.99	I	Staging area for HDD exit point (I-84, Still River, Mill Plain Road)	No	NA
2.0	Right	100 x 175	0.22	I	Road crossing	No	NA
2.1	Left	145 x 190	0.21	F	Wetland	No	NA
2.1	Right	335 x 190	0.22	F, I, O	Wetland	No	NA
2.4	Right	50 x 125	0.14	F, I, R	Road crossing	No	NA
2.4	Left	35 x 110	0.09	I, R	Road crossing	No	NA
2.6	Left	35 x 100	0.08	F	Wetland	No	NA
2.7	Left	50 x 140	0.13	F	Wetland	Yes	A13-SELR-W4
3.0	Left	60 x 260	0.30	F, I	Wetland	No	NA
3.2	Left	10 x 360	0.10	F, I, R	Wetland and road crossing	No	NA
3.3	Left	60 x 152	0.08	R	Wetland and road crossing	Yes	B13-SELR-S1
3.4	Left	45 x 90	0.08	R	Wetland and road crossing	No	NA
3.4	Right	35 x 305	0.20	F, O, R	Wetland and road crossing	No	NA
3.5	Right	30 x 160	0.10	F, I, O	Wetland and road crossing	No	NA
3.6	Left	10 x 490	0.11	F	Wetland	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
3.9	Right	50 x 175	0.19	F, I	Wetland and road crossing	No	NA
4.3	Left	25 x 70	0.04	I, R	Road crossing	No	NA
4.5	Left	145 x 285	0.96	R	Valve site 19	No	NA
E-1 SYSTEM LATERAL TAKE-UP AND RELAY							
New London County, CT							
0.0	Left	35 x 180	0.13	F, I	Wetland and road crossing	Yes	B13-ELR-W200
0.1	Left	50 x 100	0.11	F	Wetland	No	NA
0.6	Left	50 x 100	0.11	F	Waterbody	No	NA
0.7	Left	50 x 100	0.12	F	Waterbody/wetland	Yes	A13-ELR-W1; A13-ELR-S1
0.9	Left	50 x 300	0.35	F, I	Wetland and road crossing	No	NA
0.9	Right	25 x 220	0.13	F, I, O	Road crossing	No	NA
1.2	Right	50 x 100	0.12	F	Waterbody	No	NA
1.2	Right	50 x 100	0.12	F	Waterbody	No	NA
1.8	Right	50 x 100	0.11	A, F	Wetland	No	NA
1.9	Left	50 x 330	0.38	A, I	Wetland and road crossing	No	NA
1.9	Right	75 x 145	0.09	A, I	Wetland and road crossing	Yes	A13-ELR-W2
2.3	Left	50 x 245	0.28	A	Wetland	No	NA
2.4	Left	50 x 100	0.11	A	Wetland	No	NA
2.4	Left	50 x 100	0.11	A	Wetland	No	NA
2.5	Left	50 x 200	0.23	A, F	Wetland	No	NA
2.6	Left	50 x 100	0.12	O	Wetland	No	NA
2.7	Right	25 x 200	0.12	F, O	Wetland	Yes	A13-ELR-W6
2.9	Left	50 x 100	0.12	F	Wetland	No	NA
3.1	Left	50 x 300	0.33	F, I	Wetland and road crossing	No	NA
3.3	Left	50 x 100	0.11	F	Wetland	No	NA
3.3	Left	50 x 100	0.12	F	Wetland	No	NA
3.4	Left	50 x 100	0.11	F	Wetland	No	NA
3.5	Left	50 x 100	0.12	A, F	Wetland	No	NA
3.7	Left	50 x 100	0.12	F	Waterbody	No	NA
3.8	Left	50 x 100	0.12	F	Waterbody	No	NA
4.1	Left	50 x 100	0.11	O	Wetland	No	NA
4.4	Left	50 x 100	0.11	O	Wetland	No	NA
4.5	Left	50 x 100	0.11	O	Wetland	No	NA
4.5	Left	50 x 100	0.11	O	Wetland	No	NA
4.7	Left	50 x 100	0.11	O	Waterbody	No	NA
4.7	Left	50 x 100	0.11	O	Waterbody	No	NA
4.8	Left	50 x 100	0.11	O	Waterbody	No	NA
4.8	Left	50 x 100	0.11	O	Waterbody	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
4.9	Left	50 x 150	0.17	O	Waterbody/wetland	Yes	B13-ELR-S11
5.0	Left	50 x 100	0.11	O	Wetland	No	NA
5.0	Left	50 x 100	0.11	O	Waterbody	No	NA
5.1	Right	50 x 100	0.12	F, O	Waterbody	No	NA
5.1	Right	25 x 100	0.06	F	Spread move-around	No	NA
5.3	Right	50 x 100	0.11	F	Wetland/waterbody	No	NA
5.4	Left	25 x 100	0.05	O	Wetland	No	NA
5.6	Left	50 x 250	0.29	O	Wetland	No	NA
5.6	Left	50 x 100	0.11	O	Wetland	No	NA
5.7	Right	25 x 295	0.16	F, I, O	Wetland	No	NA
5.8	Left	50 x 100	0.12	F	Wetland/waterbody	No	NA
5.8	Left	50 x 50	0.07	F	Waterbody	Yes	B13-ELR-S5B
5.9	Left	50 x 100	0.11	F	Wetland	No	NA
6.0	Left	50 x 150	0.16	F	Road crossing	No	NA
6.1	Left	50 x 100	0.11	F	Wetland	No	NA
6.1	Left	35 x 100	0.08	F	Wetland	No	NA
6.3	Left	50 x 100	0.11	F	Wetland	No	NA
6.4	Left	50 x 100	0.11	F	Wetland	No	NA
6.7	Left	50 x 130	0.14	F, O	Spread move-around	No	NA
6.7	Right	75 x 100	0.17	F	Spread move-around	No	NA
6.9	Left	15 x 145	0.05	F, O	Wetland	No	NA
6.9	Left	50 x 100	0.12	F	Wetland	No	NA
7.2	Left	50 x 150	0.17	F	Wetland	No	NA
7.3	Right	135 x 275	0.50	F, I	Wetland and road crossing	Yes	B13-ELR-W22
7.3	Left	175 x 350	1.16	F, I	Wetland and road crossing	Yes	B13-ELR-W22
7.4	Left	50 x 100	0.11	F	Wetland	No	NA
7.8	Left	50 x 100	0.11	A	Wetland	No	NA
7.9	Left	50 x 100	0.11	F	Wetland	No	NA
8.3	Left	50 x 100	0.11	F	Wetland	No	NA
8.4	Left	50 x 100	0.12	F, I	Wetland	No	NA
8.5	Left	50 x 150	0.16	F, I	Waterbody and road crossing	Yes	B13-ELR-S18
8.5	Right	150 x 130	0.16	F, I	Road crossing	Yes	B13-ELR-S18
8.6	Left	25 x 100	0.06	F	Spread move-around	No	NA
8.7	Left	50 x 100	0.11	F	Wetland	No	NA
8.8	Left	50 x 100	0.11	F	Wetland	No	NA
8.9	Left	50 x 100	0.11	F	Wetland/waterbody	Yes	B13-ELR-S24
9.0	Left	50 x 100	0.11	F	Waterbody	No	NA
9.1	Left	25 x 150	0.09	O	Valve assembly at a new launcher/	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
					receiver facility		
9.1	Right	235 x 150	0.80	F, O	Valve assembly at a new launcher/ receiver facility	No	NA
LINE-36A LOOP EXTENSION							
Middlesex County, CT							
0.1	Left	35 x 100	0.08	F	Wetland	No	NA
0.7	Left	35 x 100	0.08	F	Wetland	No	NA
0.8	Left	50 x 50	0.06	F	Avoid waterbody	Yes	B13-CLR-W2
0.9	Left	50 x 175	0.15	A	Wetland	No	NA
1.0	Left	35 x 80	0.04	A	Wetland	No	NA
1.1	Left	35 x 150	0.12	A	Wetland	No	NA
1.4	Left	80 x 270	0.50	F, R	Wetland and avoid waterbody	Yes	B13-CLR-W4
1.4	Left	25 x 120	0.06	F	Wetland	No	NA
1.6	Right	95 x 200	0.28	A, I	Existing pipeline crossover	No	NA
1.7	Right	100 x 150	0.34	A, I	Existing pipeline crossover	No	NA
1.7	Right	25 x 100	0.06	A, I	Road crossing	No	NA
E-1 SYSTEM LATERAL LOOP EXTENSION							
New London County, CT							
0.0	Left	25 x 130	0.07	F, I	Road crossing	No	NA
0.0	Right	105 x 295	0.66	F, I, R	Road crossing	No	NA
0.1	Left	25 x 100	0.06	F, O	Wetland/waterbody	No	NA
0.1	Left	25 x 100	0.06	F, O	Wetland	No	NA
0.2	Left	25 x 100	0.06	F	Wetland	No	NA
0.3	Left	25 x 100	0.06	F	Wetland	No	NA
0.5	Left	25 x 100	0.05	F	Wetland	No	NA
0.6	Right	55 x 155	0.16	F	Spread move-around	No	NA
0.6	Left	55 x 155	0.14	F, O	Spread move-around	No	NA
0.8	Right	25 x 100	0.06	F	Waterbody	No	NA
0.8	Right	25 x 100	0.06	F	Waterbody	No	NA
0.9	Right	25 x 100	0.06	F	Wetland	No	NA
1.0	Right	25 x 100	0.06	F	Wetland	No	NA
1.1	Right	25 x 100	0.06	F	Wetland	No	NA
1.2	Right	25 x 100	0.06	F	Wetland	No	NA
1.2	Left	25 x 140	0.07	F, O	Spread move-around	No	NA
1.3	Left	65 x 365	0.31	F, I	Road crossing	No	NA

TABLE C-1 (cont'd)

Location of Additional Temporary Workspace Along the AIM Project Pipeline Facilities

Facility, County, State, Approximate Milepost	Side of Construction Work Area	Approximate Dimensions (feet) [a]	Acres	Existing Land Use [b]	Justification	Requires Variance	Wetland or Waterbody
WEST ROXBURY LATERAL							
Norfolk County, MA							
0.0	Right	75 x 145	0.20	F	New launcher/ receiver facilities	No	NA
0.0	Left	70 x 235	0.36	F, I, O, R	New launcher/ receiver facilities	No	NA
0.2	Left	30 x 115	0.24	I	New block valve	No	NA
0.2	Left	25 x 80	0.05	F, O	Road crossing	No	NA
0.4	Left	285 x 350	2.10	F, O	Staging for I-95 crossing	No	NA
0.5	Right	50 x 100	0.11	F, I	Staging for I-95 crossing	No	NA
0.6	Left	30 x 190	0.15	I	Railroad and road crossing	No	NA
0.6	Right	60 x 165	0.32	I	Railroad and road crossing	No	NA
0.9	Right	60 x 135	0.15	I	Existing utility lines	No	NA
1.1	Left	65 x 230	0.31	I	Existing utility lines	No	NA
1.8	Right	180 x 285	0.45	F, I	Wetland	No	NA
2.5	Right	170 x 100	0.30	I, O	Staging for road crossings and spread move-around	No	NA
2.6	Right	85 x 115	0.06	I, R	Road crossing	No	NA
2.6	Right	85 x 235	0.46	I	Staging of equipment and materials	No	NA
3.0	Left	65 x 355	0.53	I, O	Road crossing	No	NA
Suffolk County, MA							
3.8	Right	170 x 180	0.29	I, R	Road crossing	No	NA
5.1	Left	85 x 285	0.16	I, R	Road crossing	No	NA

[a] For irregularly shaped workspaces, multiplication of approximate dimensions will not yield the correct workspace area. Refer to "Acres" column for the correct area.

[b] A = Agricultural; F = Forest/woodland; I = Industrial/commercial; O = Open land; OW = Open water; R = Residential.

NA = Not Applicable

APPENDIX D

PROPOSED CONSTRUCTION TECHNIQUES BY MILEPOST TABLE

TABLE D-1

Proposed Construction Techniques by Milepost for the AIM Project

State, County, Municipality	Milepost Start	Milepost End	Length (Miles) [a]	Construction Method
NEW YORK				
Haverstraw to Stony Point Take-up and Relay				
Rockland County				
Haverstraw	0.00	0.36	0.36	Standard
	0.36	0.63	0.27	Drag
	0.63	1.0	0.37	Standard
	1.0	1.18	0.18	Drag
Stony Point	1.18	1.20	0.02	Drag
	1.20	1.61	0.41	Standard
	1.61	1.80	0.19	Drag
	1.80	1.90	0.10	Standard
	1.90	2.16	0.26	Drag
	2.16	2.20	0.04	Bore
	2.20	3.00	0.80	Drag
	3.00	3.27	0.27	Standard
Stony Point to Yorktown Take-up and Relay				
Rockland County				
Stony Point	0.00	0.36	0.36	Standard
	0.36	0.71	0.35	Drag
	0.71	1.29	0.58	Standard
	1.29	2.62	1.33	Drag
	2.62	3.14	0.52	Standard
	3.14	3.15	0.01	Bore
	3.15	3.00	0.04	Standard
	3.00	3.47	0.47	Hudson River HDD
Westchester County				
Cortlandt				
Verplanck	3.47	3.97	0.50	Hudson River HDD
Verplanck	3.97	4.60	0.69	Standard
Buchanan	4.60	5.48	0.88	Standard
Buchanan	5.48	5.71	0.23	Drag
Peekskill	5.71	5.72	0.01	Bore
Peekskill	5.72	5.74	0.02	Bore
Peekskill	5.74	5.81	0.07	Drag
Peekskill	5.81	5.84	0.03	Bore
	5.84	5.86	0.02	Bore
Peekskill	5.86	5.88	0.02	Bore
Peekskill	5.88	5.96	0.08	Drag
	5.96	6.34	0.39	Standard
	6.34	6.70	0.36	Drag
	6.70	8.08	1.38	Standard
	8.08	8.36	0.28	Drag
	8.36	8.94	0.58	Standard

TABLE D-1 (cont'd)

Proposed Construction Techniques by Milepost for the AIM Project

State, County, Municipality	Milepost Start	Milepost End	Length (Miles) [a, b]	Construction Method
	8.94	10.47	1.53	Drag
	10.47	10.50	0.03	Bore
	10.50	10.74	0.24	Drag
	10.74	11.02	0.28	Standard
Yorktown	11.02	11.16	0.14	Drag
	11.16	12.31	1.15	Standard
Southeast to MLV-19 Take-up and Relay				
Putnam County				
Southeast	0.00	0.13	0.13	Standard
CONNECTICUT				
Southeast to MLV-19 Take-up and Relay				
Fairfield County				
Danbury	0.13	1.23	1.10	Standard
	1.23	1.42	0.19	Drag
	1.42	2.07	0.65	Interstate 84 HDD
	2.07	4.47	2.40	Drag
Line-36A Loop Extension				
Middlesex County				
Cromwell	0.00	1.23	1.23	Standard
	1.23	1.28	0.05	Drag
	1.28	1.73	0.45	Standard
Hartford County				
Rocky Hill	1.73	2.00	0.27	Standard
E-1 System Lateral Take-up and Relay				
New London County				
Lebanon	0.00	1.84	1.84	Standard
	1.84	1.91	0.07	Drag
	1.91	1.92	0.01	Bore
	1.92	2.03	0.11	Drag
	2.03	3.90	1.87	Standard
Franklin	3.90	5.81	1.91	Standard
	5.81	5.82	0.01	Bore
	5.82	7.35	1.53	Standard
	7.35	7.36	0.01	Bore
	7.36	8.37	1.01	Standard
Norwich	8.37	9.11	0.74	Standard
E-1 System Lateral Loop Extension				
New London County				
Montville	0.00	0.02	0.02	Standard
	0.00	0.21	0.21	Drag
	0.21	1.32	1.11	Standard
MASSACHUSETTS				
West Roxbury Lateral				
Norfolk County				
Westwood	0.00	0.16	0.16	Drag
	0.16	0.18	0.02	Bore
	0.18	0.41	0.23	Drag
	0.41	0.47	0.06	Bore Interstate 95

TABLE D-1 (cont'd)

Proposed Construction Techniques by Milepost for the AIM Project

State, County, Municipality	Milepost Start	Milepost End	Length (Miles) [a, b]	Construction Method
Dedham	0.47	0.62	0.15	Drag
	0.62	0.64	0.02	Bore
	0.64	2.42	1.78	Drag / In-street
	2.42	2.54	0.12	Drag
	2.54	3.12	0.48	Drag / In-street
	3.12	3.14	0.02	Drag
	3.14	3.44	0.30	Drag / In-street
Suffolk County				
Boston				
West Roxbury	3.44	4.25	0.81	Drag / In-street
	4.25	4.36	0.11	Drag
	4.36	5.14	0.68	Drag / In-street

[a] Minor discrepancies in totals are due to rounding.

[b] The length of the pipeline does not match the mileposting system. This is because several route modifications were incorporated into the proposed route after the mileposting system was established. This specifically affects the West Roxbury Lateral where the changes resulted in an overall decrease in total pipeline length. The change to the other segments did not result in an overall change in the segment lengths.

APPENDIX E

ROCK REMOVAL PLAN

Algonquin Gas Transmission, LLC

ALGONQUIN INCREMENTAL MARKET PROJECT

Rock Removal Plan

February 2014

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1.0 INTRODUCTION

This Rock Removal Plan ("Plan") describes the methods that will be implemented during construction of the Algonquin Gas Transmission, LLC ("Algonquin") Incremental Market Project ("AIM Project" or "Project").

This Plan includes a brief description of the pipeline alignment, and overall physiological setting and bedrock geology in the vicinity of the Project. Information on shallow-to-bedrock soils and bedrock outcroppings is taken from the local published soil maps (and unpublished maps in progress) as acquired from the Natural Resources Conservation Service ("NRCS"). General bedrock type is also discussed. A map depicting the location of the AIM Project pipeline route is provided in Figure 1.1-1.

Information on the characteristics of the bedrock may be evaluated at least in a general sense, and applied towards an appropriate bedrock excavation method. The bedrock properties were developed using historical and observational data; Algonquin will continue this approach while assessing the pipeline route.

The hard and intact nature of the unweathered igneous bedrock (basalts and granites) and metamorphic bedrock (slates, phyllites, schists and quartzites) dictate what removal methods will be utilized. Soft bedrock, such as sedimentary or weathered igneous and metamorphic rock, may possibly be removed by ripping. Other geologic features may also control the effects of removal. Rock fabric, or the arrangements of minerals, determines intrinsic rock strength, and thus influences rock excavation. Joint spacing, bedding, and foliation also influence rock excavation. Lithologic generalizations of the AIM Project area rock type include:

- granitic rock is invariably resistant, except where weathered;
- granulitic (high temperature-high pressure metamorphic rock with gniessic texture) and migmatitic (cooled rock having reached the boundary between metamorphism and magmatism) rock are also equally resistant;
- ultramafic (rich ferromagnesium) rocks are highly fractured and almost always require blasting. Other metamorphic rock along the geothermal gradient may have a wide range of susceptibility to blasting or ripping. It is the most difficult to predict of the hard rocks. Degrees of intensity of metamorphism can be further deduced from the minerals that schists contain; and
- weathered or thinly bedded sedimentary rock is generally amenable to ripping.

These generalizations have been further grouped into two bedrock contact types: Lithic contact and Paralithic contact. The material below a lithic contact is either strongly cemented or the material is indurated and cannot be removed by conventional machinery. The materials below the Paralithic contact are partially weathered bedrock or weakly consolidated bedrock, such as sandstone, siltstone, or shale and is generally considered rippable by machinery. See the tabe in Appendix A which lists the surficial geology associated with areas with shallow-to-bedrock and bedrock outcroppings by mile post ("MP").

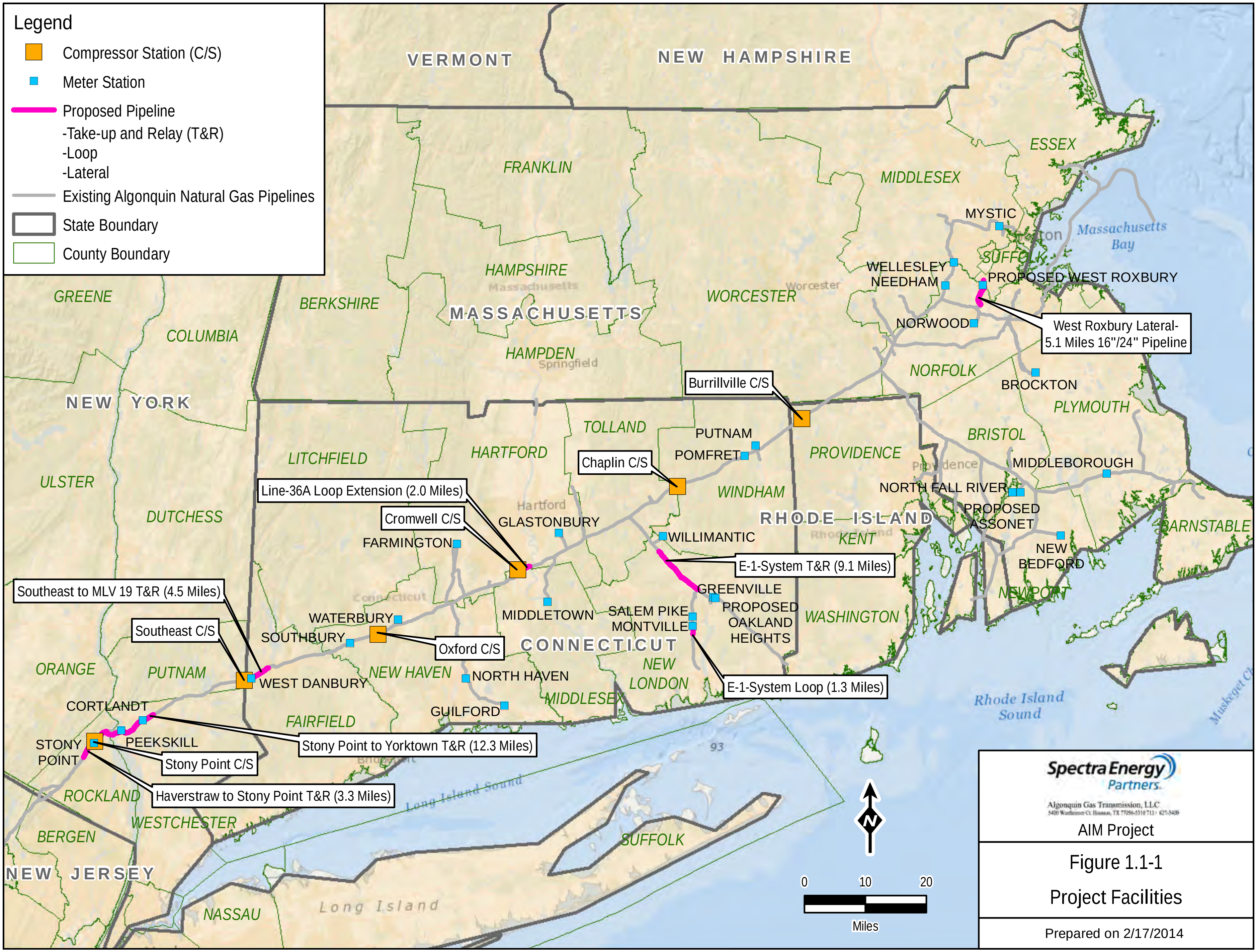

Figure 1.1-1
Project Facilities

2.0 PROJECT ALIGNMENT

The proposed Project consists of:

- Haverstraw to Stony Point Take-up & Relay - Take-up and relay 3.3 miles of 26-inch diameter pipeline with 42-inch diameter pipeline in Rockland County, New York upstream of Algonquin's existing Stony Point Compressor Station;
- Stony Point to Yorktown Take-up & Relay - Take-up and relay 9.4 miles of 26-inch diameter pipeline with 42-inch diameter pipeline and the installation of an approximately 2.9-mile section of new pipeline ROW that includes a 0.72-mile horizontal directional drill ("HDD") crossing of the Hudson River. This 12.3-mile segment is located in Rockland County, New York and Westchester County, New York downstream of Algonquin's existing Stony Point Compressor Station;
- Southeast to MLV 19 Take-up & Relay - Take-up and relay 4.5 miles of 26-inch diameter mainline pipeline with 42-inch diameter pipeline (including a new 0.7-mile long, 42-inch diameter HDD pipeline crossing of Interstate 84 and the Still River) located in Putnam County, New York and Fairfield County, Connecticut downstream of and between Algonquin's existing Southeast Compressor Station and mainline valve ("MLV") 19;
- Line-36A Loop Extension - Installation of 2.0 miles of 36-inch diameter pipeline loop extension in Middlesex County, Connecticut and Hartford County, Connecticut downstream of Algonquin's existing Cromwell Compressor Station;
- E-1 System Lateral Take-up & Relay - Take-up and relay 9.1 miles of 6-inch diameter pipeline with 16-inch diameter pipeline on Algonquin's existing E-1 System in New London County, Connecticut;
- E-1 System Lateral Loop - Installation of 1.3 miles of 12-inch diameter pipeline loop on Algonquin's existing E-1 System in New London County, Connecticut; and
- West Roxbury Lateral - Installation of 4.1 miles of new 16-inch diameter pipeline and 0.8 miles of new 24-inch diameter pipeline off of Algonquin's existing I-4 System in Norfolk and Suffolk Counties, Massachusetts.

There will also be a number of modifications to existing compressor stations and metering and regulating ("M&R") facilities, as well as installation of ancillary facilities for the pipeline which will consist of mainline valves and other appurtenant facilities.

3.0 GEOLOGIC SETTING

3.1 Physiography

The geology of the AIM Project area is very diverse, with complex arrays of folded and faulted metamorphic and igneous bedrock overlain by glacial deposits of varying thickness. Resource Report 6 provides additional information on geology.

Project facilities located in New York, Connecticut, and Rhode Island are within the New England Upland section of the New England province. This section is often described as a complex sequence of terrains, which are the result of land masses accreted to North America during the formation of Pangea and continental rifting during Pangea's separation. This resulted in mountainous areas with adjacent ranges having varied and distinct lithologies. These mountains were eroded and are now represented by the Ramapo Mountains in New York and the Bolton Range and Mohegan Range in Connecticut.

Project facilities in Massachusetts are located in the Coastal Lowland section of the New England province. The section was largely inundated by ocean water as the Laurentian ice sheet receded at the close of the Wisconsin glaciation. Erosion by wave action lowered the relief of these areas so that, once the land rebounded, the coastal areas had lower relief than areas further inland.

3.2 Topography

The pipeline route from Haverstraw to Stony Point traverses gentle slopes, hills of moderate relief (<200 feet), and slopes that are moderate. From Algonquin's existing Stony Point Compressor Station, the pipeline traverses moderate to steep relief and ascends and descends the moderate to steep slopes of Buckberg Mountain (approximately 450 feet of relief). It descends to the western shore of the Hudson River, comes ashore on the east bank of the Hudson River and continues along gentle to moderate slopes. In Connecticut, the pipeline segment traverses rolling hills with steep, moderate, and gentle slopes including a series of drumlins. In Massachusetts, the West Roxbury Lateral traverses gently sloping land along existing roadways. There is no pipeline proposed in Rhode Island.

3.3 Surficial Geology

Surficial geology of the AIM Project area is dominated by glacial till with discontinuous bedrock outcroppings, sand and gravel deposits, and fine grained deposits consisting of lacustrine and swamp sediments. Quaternary deposits can be broken out into three general categories, based on their depositional environment: deposits laid down by advancing ice sheets (moraines and most tills); glacial melt deposits (stratified deposits from glacial streams and lakes); and postglacial deposits (alluvium in existing floodplains and swamp deposits). Quaternary geologic materials may be categorized by their depositional environment (e.g., swamp), grain size (e.g., sand and gravel), formation type (e.g., moraine), or a combination of these (e.g., lacustrine sand).

The NRCS data collected for Resource Report 7 reveals that all soils with shallow-to-bedrock and bedrock outcroppings that are found within the AIM Project are glacial tills. See the table in Appendix A which lists the surficial geology associated with areas with shallow-to-bedrock and bedrock outcroppings by MP.

3.4 Subsurface Geology

Bedrock geology of the AIM Project area is dominated by igneous and metamorphic rocks with carbonate rock in limited areas. These rocks are characterized as having a lithic contact and will mostly require blasting for removal. A review of bedrock geology maps provided information regarding the nature of units expected in the Project area. Bedrock geology maps can be found in Appendix 6B of Resource Report 6.

New York

Hornblende Granite and Granite Gneiss (hg) - Middle Proterozoic age hornblende granite and granite gneiss with subordinate leucogranite.

Diorite with hornblende and/or biotite (Od) – Upper Ordovician age diorite with hornblende and/or biotite that is part of the Cortlandt and smaller mafic complexes.

Manhattan Formation (Undivided) (Om) – The Manhattan Formation is comprised of Ordovician pelitic schists, amphibolites and part of Trenton Group and Metamorphic Equivalents up to 8,000 feet (2,400 meters). The unit is mapped under Om in digital mapping but can be subdivided into Cambrian eugeosynclinal rocks (Omb, Omc, and Omd). Subunit Omd is comprised of sillimanite-garnet-muscovite-biotite-plagioclase-quartz gneiss. Subunit Omc is comprised of sillimanite-garnet-muscovite-biotite-quartz-plagioclase schistose gneiss, sillimanite nodules, and local quartz-rich layers. Subunit Omb is comprised of a discontinuous unit of amphibolite and schist.

Biotite augite norite (Oban) – Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes.

Hornblende norite (Ohn) – Upper Ordovician norite that is part of the Cortlandt and smaller mafic complexes. The hornblende is poikilitic.

Olivine pyroxenite (Opx) – Upper Ordovician pyroxenite with poikilitic hornblende that is part of the Cortlandt and smaller mafic complexes. A secondary rock type is peridotite.

Muscovite-biotite granodiorite (Dpgd) – Upper Devonian age muscovite-biotite granodiorite that is part of the Peekskill Pluton.

Muscovite-biotite granite (Dpgr) – Upper Devonian granite that is part of the Peekskill Pluton.

Connecticut

Gneiss of Highlands massifs (Yg) – Proterozoic age gneiss with secondary amphibolite and schist that was part of the proto-North American terrane. It may include a mixture of rock types when they aren't mapped separately, including pink granitic gneiss (Ygr), Augen gneiss (Yga), layered gneiss (Ygn), Hornblende gneiss and amphibolite (Ygh), and rusty mica schist and gneiss (Ygs).

Hornblende gneiss and amphibolite (Ygh) – Proterozoic age hornblende gneiss and amphibolite that is dark gray to mottled, fine- to medium-grained, massive to foliated amphibolite and gneiss, composed of hornblende and plagioclase with biotite and minor quartz. This formation is often interlayered with banded felsic gneiss and locally contains calc-silicate rock or diopsidic calcite marble.

Pink granitic gneiss (Ygr) – Proterozoic granitic gneiss that is light pink to gray in color, medium to coarse texture, foliated but generally massive or poorly layered granitic gneiss having quartz, microline, oligoclase, and either biotite or muscovite (or both), with amphibole or epidote occurring locally.

Waterford Group (Zw) – Light to dark, generally medium grained gneiss, composed of plagioclase, quartz, and biotite, with hornblende in some layers and microcline in others. There are layers of amphibolite. The Waterford group is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.

Waterford Group, Stony Creek Granite Gneiss, and Narragansett Pier Granite (undifferentiated) (Zw+Zsc+Pn) – Proterozoic gneiss and granitic gneiss intruded by Permian age gneiss with considerable pegmatite formations.

Plainfield Formation (Zp) – Comprised of several rock types: Intelayered light gray, thin-bedded quartzite, in places with feldspar, mica, graphite, or pyrite; light to medium gray gneiss composed of quartz, oligoclase, and biotite; medium to dark gray schist composed of quartz, oligoclase, biotite, sillimanite, and garnet; dark gray or green gneiss composed of plagioclase, quartz, biotite, and hornblende; and amphibolite, diopsite-bearing quartzite, and calc-silicate rock. The Plainfield Formation is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.

Hope Valley Alaskite Gneiss (Zsh) – Light pink to gray, medium- to coarse-grained, locally porphyritic, variably lineated and foliated alaskitic gneiss, composed of microcline, quartz, albite or oligoclase, and minor magnetite, and locally biotite and muscovite. The Hope Valley Alaskite Gneiss is Proterozoic in age and part of the Avalonian Terrane, the Avalonian Anticlinorium, and the Sterling Plutonic.

Potter Hill Granite Gneiss (Zsph) – Light pink to gray (weathering tan) fine- to medium-grained, rarely porphyritic, well-foliated granitic gneiss composed of microcline, quartz, oligoclase (or albite), biotite, and magnetite, minor muscovite and local garnet. The Potter Hill Granite Gneiss is Proterozoic in age and part of the Avalonian Terrane and the Avalonian Anticlinorium.

Stockbridge Marble (OCs) – Lower Ordovician and Cambrian age white to gray, massive to layered marble, generally dolomitic but containing calcite marble in the upper part, locally interlayered with schist or phyllite and with calcareous siltstone or sandstone. The Stockbridge Marble represents the carbonate shelf of the Proto-North American terrane.

Basal marble member of Walloomsac Schist (Owm) – Middle Ordovician dark-gray to white, massive to layered schistose or phyllitic calcite-phlogopite marble.

Brimfield Schist (Obr?) – Upper (possibly) and middle Ordivician gray colored (weathering to rust), medium to coarse-grained, interlayered schist and gneiss, composed of oligoclase, quartz, potassium feldspar, and biotite, commonly with garnet, sillimanite, graphite, and pyrrhotite. Potassium feldspar often occurs as augen (“eyes”) 1-3 cm across. Minor layers and lenses include hornblende- and pyroxene-bearing gneiss, amphibolite, and calc-silicate rock.

Yantic Member of Tatnic Hill Formation (Otay) – Upper and Middle Ordovician age medium to dark gray, fine- to medium-grained schist, composed of quartz, oligoclase, biotite, and muscovite, some layers with garnet, staurolite, and kyanite or garnet and sillimanite, local epidote, or potassium feldspar and some layers of rusty-weathering graphititc, pyrrhotitic, two-mica schist.

Tatnic Hill Formation (Ota) – Medium to dark gray, medium-grained gneiss or schist composed of quartz, andesine, biotite, garnet, and sillimanite (locally kyanite, muscovite, or potassium feldspar) that is interlayered with graphitic pyrrhotitic two-mica schist, amphibolite, and calc-silicate rock.

Hebron Gneiss (SOh) – Silurian and Ordivician interlayered dark-gray colored, medium to coarse-grained schist, composed of andesine, quartz, biotite, and local potassium feldspar and greenish-grey, fine to medium-grained calc-silicate rock, composed of labradorite, quartz, biotite, anctinolite, hornblende, and diopside, with local scapolite. There are local lenses of graphitic two-mica schist. The Hebron Gneiss is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.

Lebanon Gabbro (Dl) – Devonian age, dark, speckled, massive (but locally sheared) gabbro, composed of hornblende, labradorite, and opaques. Some rock bodies contain biotite and quartz, and some smaller bodies are almost pure hornblende with local augite. The Lebanon Gabbro is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.

Dioritic phase of Lebanon Gabbro (Dld) – Devnoian age white to black, streaked, medium-grained, foliated or sheared mafic gneiss, composed of plagioclase, biotite, quartz, and often hornblende.

Maromas Granite Gneiss (Dm) – Light-gray to buff colored, medium- to fine-grained granitic gneiss, composed of quartz and microcline with minor plagioclase and biotite. Pegmatite bodies are common in the vicinity.

Scotland Schist (DSs) – Devonian or Silurian age silvery (with local rust coloration), fine- to medium-grained schist containing quartz, muscovite, biotite, staurolite, and oligoclase (locally with kyanite or sillimanite) and interlayered with quartz-oligoclase-biotite schist and granofels and quartzite, typically near the base and on the west side of the formation. The Scotland Schist is part of the Iapetus (Oceanic) Terrane and the Merrimack Synclinorium.

Quartzite unit in Scotland Schist (DSsq) – Devonian or Silurian quartzite, generally micaceous, interlayered with mica schist.

Portland Arkose (Jp) – Lower Jurassic age reddish-brown to maroon colored micaceous arkose and siltsone and red to black fissile silty shale. On the east it grades into coarse conglomerate.

New Haven Arkose (TRnh) – Red, pink, and gray colored coarse-grained poorly sorted and indurated arkose, with conglomerate locally, that is interbedded with brick-red micaceous, locally shaly siltstone and fine-grained feldspathic clayey sandstone.

Massachusetts

Dedham Granite (Zdgr) – Proterozoic, light grayish-pink to greenish-gray, equigranular to slightly porphyritic, variably altered granite with secondary diorite and quartz monzonite.

Granite of the Fall River pluton (Zfgr) – Proterozoic age light-gray, medium-grained, biotite granite, partially mafic-poor.

Gneiss and schist near New Bedford (Zgs) – Proterozoic age hornblende and biotite schist and gneiss, amphibolite.

Westwood Granite (Zwgr) – Proterozoic age light gray to pinkish gray, fine to medium grained granite.

Granite, gneiss, and schist, undivided (Zgg) –Plutonic and metamorphic rocks that are probably Proterozoic in age.

Cambridge Argillite (PzZc) – Proterozoic to early Paleozoic age gray argillite to minor quartzite with some sandstone and conglomerate.

Roxbury Conglomerate (PzZr) – Proterozoic to early Paleozoic age conglomerate, sandstone, siltstone, argillite, and metaphyre.

Wamsutta Formation (Pw) – Middle to Lower Pennsylvanian age, red to pink colored, well-sorted conglomerate, greywacke, sandstone, and shale.

Rhode Island Formation (Pr) – Upper and Middle Pennsylvanian age gray sandstone, graywacke, shale, and conglomerate and black shale. Also contains minor meta-anthracite beds.

3.5 Soil Hazards

The characteristics of the major soil types, vegetative cover, and slope are important factors in determining the potential for soil hazards. With regards to rock removal, there are areas identified along the AIM Project that are prone to introduction of rocks into topsoil during excavation and backfilling. Other issues of potential soil hazards include areas along the pipeline route that are prone to severe erosion, are designated as prime farmland, hydric, prone to compaction, and soils with poor or very poor revegetation potential. These soil hazards are further discussed in Section 7.3 of Resource Report 7.

Soils with shallow-to-bedrock soils and bedrock outcroppings are shown by pipeline segment and MP in Appendix A. Soil descriptions of each soil type can be cross referenced by the Soil Map Unit in Resource Report 7.

4.0 ROCK REMOVAL CONSIDERATIONS

This Rock Removal Plan will be utilized for each site when solid rock is encountered as part of the pipeline trench excavation, the grading to prepare a level linear work area, or the excavation for above ground facilities. Refer to the table in Appendix A which identifies areas of the pipeline route where bedrock is expected within sixty inches of natural grade by MP. Construction within these areas may encounter solid rock while excavating or grading.

If rock is encountered, the experienced contractor will analyze the rock type and hardness, and consider all other contributing factors – such as location, surrounding environment, nearby facilities, residences, and/or resources. The procedures outlined in the Rock Removal Plan will then be utilized to determine a suitable rock removal procedure, subject to Algonquin approval.

Should rock be encountered during grading or trench excavation, the contractor will assess the rock properties and attempt to remove rock using simple mechanical processes, such as a bull dozer mounted rock ripping attachment, or rock teeth on an excavator bucket. If alternative methods are considered, such as an excavator mounted hydraulic breaker, line drilling and ripping, or drilling and blasting, approval from Algonquin will be required.

For rock removal adjacent to other utilities, information will be gathered on the depth of trench, proximity to the existing utility, the type of rock, and other factors. Following an evaluation by Algonquin, the contractor will be notified of all approved rock removal methods for the site that adhere to Algonquin specifications.

The contractor will then assess proximity to structures, resources, facilities, and residences. Federal, state, and local regulations will be consulted to determine acceptable removal methods within the area. If blasting is allowed, all necessary steps will be taken to protect existing conditions - such as pre/post blast surveys at residences and structures, water well testing as applicable, and utilization of blasting mats.

The contractor will make a reasonable effort to first mechanically remove the rock in congested or densely residential areas. If the mechanical methods of removal fail to properly fragment the rock, then blasting will be used (where allowed by Algonquin and applicable regulations). For all other areas, the contractor will ultimately select the rock removal method from the methods approved by Algonquin and applicable regulations. The decision will be based upon the factors listed above, as well as others. These additional factors are inclusive of, but are not limited to: volume of rock to be removed, availability of equipment and personnel, and site specific considerations.

If blasting is selected, then site-specific detailed blasting plans will be developed for each site to meet Algonquin's specifications and standard practices.

5.0 ROCK REMOVAL METHODS

There are several possible methods to remove rock from within an excavation. Each method is best suited for specific situations due to individual advantages and limitations.

As per Algonquin specifications, all forms of mechanical rock removal will occur between the hours of 7 a.m. and 6 p.m. (unless otherwise specified by Algonquin or restricted by permit). Additionally, a fragmentation rate of at least 75 percent of trench rock to less than 6 inches in diameter is required.

Provided below is a general overview of each method.

5.1 Excavation

During normal trenching activities, the contractor will be using excavators to remove soil from the path of the pipeline. If the excavator encounters small to medium boulders, then it may be possible for the machine to remove the rock. However, it is expected that the excavator may encounter bedrock while trenching. The contractor may be able to "rip" the bedrock using rock teeth on an excavator bucket excavator or a ripping attachment on a bull dozer.

When ripping of the rock is not practical or possible, other means of rock fragmentation are necessary as described below.

5.2 Hammering

Hammering is the use of any tool that fragments rock using a percussion hammer. Two common pieces of construction equipment used in hammering are hand held jack-hammers and hydraulic breakers attached to excavators (referred to as a "hammer hoe").

Hand held jack-hammers can be useful for fragmenting pavement, concrete, or rock. However, they are only practical for small amounts of rock removal because the process is labor intensive and has limited percussive strength. Hydraulic breakers are more useful in fragmenting rock due to the increased size, efficiency, and power. Rock removal progress for hydraulic breakers is generally slow for large amounts of rock.

Hammer hoe or jack-hammer operations require planning and execution of applicable precautionary measures. Initially, all adjacent utilities must be verified and protected, including Algonquin pipelines and facilities. Fortunately, the rock immediately adjacent to existing utilities would have already been removed during their installation. Proper Personal Protective Equipment ("PPE") including hearing protection, breathing protection, and eye protection in conjunction with standard PPE will be required. Hand signals or other alternative plans/methods must be used to mitigate complications with heightened noise and dust levels.

5.3 Drilling

Drilling will be integral to achieving proper bedrock fragmentation. Two main types of rock drills may be used during construction. The primary rock drilling equipment will be an excavator mounted drill. The second possible piece of equipment is a crawler drill, which is a mobile rock drill. These machines use a rotating drill bit as well as a percussive force to create a cylindrical hole within the bedrock. The fragmented rock is then flushed out of the hole by an air compressor within the drill.

These drilling machines are integral in creating a hole within rock for blasting, as they are both quick and efficient. However, the drilling machines can also drill a formation of holes to weaken the rock. When the rock is properly drilled, hammering or ripping may then be attempted to fragment the rock. While this approach is typically the most successful form of mechanical removal, the approach still has several limitations. It increases the number and variety of equipment running at the job site to maximize the progress from this method. Production is much slower than if blasting was used. As with other mechanical methods, proper fragmentation of the rock cannot be guaranteed.

5.4 Blasting

Blasting is another method of rock removal that may be utilized. This method is supported by drilling, which is described above. After the hole is drilled, blasting operations are carried out as described within a site-specific blasting plan that addresses all of the specifications below.

6.0 BLASTING PLAN

6.1 Pre-Blast Inspection

As required by the FERC, Algonquin shall conduct pre-blast surveys, with landowner permission, to assess the conditions of structures, wells, springs, and utilities within 150 feet of the proposed construction ROW. Should local or state ordinances require inspections in excess of 150 feet from the work, the more stringent ordinances shall prevail. The survey will include:

- Informal discussions to familiarize the adjacent property owners with blasting effects and planned precautions to be taken on this Project;
- Determination of the existence and location of site specific structures, utilities, septic systems, wells and springs;
- Detailed examination, photographs, and/or video records of adjacent structures and utilities; and
- Detailed mapping and measurement of large cracks, crack patterns, and other evidence of structural distress.
- Sampling of wells or springs will consist of turbidity and bacteriological analysis (total coliform).

The results will be summarized in a condition report that will include photographs and be completed prior to the commencement of blasting.

6.2 Monitoring of Blasting Activities

During blasting, Algonquin contractors will take precautions to prevent damage to adjacent areas and structures. Precautions include:

- Display warning signage, signals, flags, and/or barricades;
- Use of matting or other suitable cover, as necessary;
- Following Federal, State, and Local procedures and regulations for safe storage, handling, loading, firing, and disposal of explosive materials; and
- Staffing existing utilities with Operations personnel during blasting operations.

Blasting will be performed only by state licensed experts (where required) and monitored by experienced blasting inspectors. As appropriate, the effects of each discharge will be monitored at the closest adjacent facilities by seismographs.

6.3 Post-Blast Inspection

To maximize its responsiveness to the concerns of affected landowners, Algonquin will evaluate all complaints of well or structural damage associated with construction activities, including blasting. A toll-free landowner hotline will be established by Algonquin for landowners to use in reporting complaints or concerns. An independent contractor engaged by Algonquin will examine, with landowner permission, the condition of structures, wells, springs, and utilities within 150 feet, or as required by federal, state, or local ordinances, of the construction area after completion of blasting operations to identify any changes in the conditions of these properties or confirm any damages noted by the landowner. Algonquin will conduct pre-blasting yield and quality testing of any well or spring within 150 feet of the blast site, and document these conditions. Like pre-blast inspection, post-blast sampling of wells or springs will consist of turbidity and bacteriological analysis (total coliform). Should any damage or change occur during the blasting operations, Algonquin will coordinate with the landowner to seek corrective action.

6.4 Waterbody Crossing Blasting Procedures

To facilitate planning for blasting activities for waterbody crossings, rock drills or test excavations may be used in waterbodies to test the ditch-line during mainline blasting operations to evaluate the presence of rock in the trench-line. The excavation of the test pit or rock drilling is not included in the time window requirements for completing the crossing. For testing and any subsequent blasting operations, stream flow will be maintained through the site. When blasting is required, the FERC timeframes for completing in-stream construction begin when the removal of blast rock from the waterbody is started. If, after removing the blast rock, additional blasting is required, a new timing window will be determined in consultation with the Environmental Inspector. If blasting impedes the flow of the waterbody, the contractor can use a backhoe to restore the stream flow without triggering the timing window. The complete waterbody crossing procedures are included in the Algonquin's E&SCP.

6.5 Blasting Specifications

The potential for blasting along the pipeline to affect any wetland, waterbody, municipal water supply, waste disposal site, well, septic system, or spring will be prevented by controlled blasting techniques and by using mechanical methods for rock excavation where reasonable. Controlled blasting techniques have also been effectively employed for decades by Algonquin and other companies to protect active utilities.

The following text presents details of Algonquin's procedures for blasting. Ultimately, the contractor is responsible for securing and complying with all necessary permits required for the transportation, storage, and use of explosives. The contractor will also be responsible for following the specifications below.

6.5.1 Pre-requisites for Use of Explosives

Prior to the use of any explosives, the contractor shall submit a blasting procedure and receive Algonquin approval. The blasting procedure shall take into account adjacent pipelines and specific requirements outlined in the Contract Documents and shall include as a minimum:

- Storage of explosives.
- Transportation of explosives.
- Inspection of drilling areas.
- Loading of explosives.
- Non-electric detonation methods. Electric detonation methods are not acceptable.
- Prevention of fly-rock during blasting, including mat placement if used.
- Security procedures.
- Sequence of events leading up the detonation of explosives.
- Proposed hours of blasting.
- True distances to buildings or operating pipelines.
- Maximum charge mass per delay interval.
- Borehole diameters.
- Hole pattern, burden, and spacing.
- Borehole depth, subgrade depth, and unloaded collar length.
- Sketch showing borehole loading details.
- Explosive names, properties, and delay sequences.
- Calculated powder factor (weight per volume of rock), based on explosive energy of 1000 calories per gram.
- Geology description.
- Borehole stemming depth.

- Special conditions or variations for grade rock, trench rock, underwater blasting, and blasting at undercrossings of existing utilities.
- Blast to open face.
- Obtain Algonquin approval and provide a notice of 72 hours prior to detonation of any explosives.
- Obtain approval from Algonquin if the blasting parameters vary from the requirements set out in this specification or the Contract Documents.
- Use of Explosives
- The Contractor shall secure and comply with all the applicable permits required for the handling, transportation, storage, and use of explosives.
- The Contractor shall not endanger life, livestock, or adjacent properties.
- The Contractor shall minimize inconveniences to the property owners or tenants during all phases of blasting.
- The Contractor shall provide physical protection to any above-grade utilities and equipment in the area of the blast.
- Algonquin shall set up required monitoring equipment.
- The Contractor shall provide monitoring equipment to ensure vibrations are limited to two inches per second (50 mm/s) PPV, when measured at dwellings, buildings, structures, and power line towers. For power line towers, this limit applies to the greatest of the three vectors; otherwise this limit is the vector sum of the three planes. The Contractor limits vibrations to one inch per second (25 mm/s) PPV for vibration-sensitive structures specified by Algonquin. In no case shall vibration amplitude exceed 0.004 in (0.15 mm).
- Any blasting in close proximity to existing in-service piping is to be in accordance with the Contract Documents.
- Charge loading is to be spread in order to obtain the optimum breakage of rock. The Contractor shall attempt to achieve a fragmentation rate of at least 75% of the trench rock to less than 6 in (150 mm) in diameter.
- All delay connectors used shall have a delay interval of at least seventeen milliseconds.
- There are to be no loaded holes left overnight, and the site is inspected after each blast for any un-detonated charges.

The Contractor shall discuss the blasting plan with Algonquin prior to each blast, including the maximum charge weight per delay, hole sizes, spacing, depths and layout. Algonquin will employ a qualified Blasting Inspector to confirm and document that the Contractor is following the approved blasting plan at each blast site. Upon completion of blasting each day, the Contractor shall provide Algonquin with the following for each blast:

- Blasting Contractor license number.
- Date, time, and location of blast.
- Hole sizes, spacing, depths, layout, and volume of rock in blast.
- Delay type, interval, total number of delays, and holes per delay.
- Explosive type, specific gravity, energy release, weight of explosive per delay, and total weight of explosive per shot.
- Powder factor.
- Copies of any seismographic data

6.5.2 Evaluation of Close-In Blasts

The following additional limitations apply for blasting at distances of less than 25 feet from the pipeline. These criteria were extrapolated from a 1970 U.S. Bureau of Mines Study ("USBOM") on cratering in granite, and refined based on a 2004 failure investigation. Other blasting limitations based upon extensive research by the Pipeline Research Committee International ("PRCI"), blasting consultants, and the USBOM regarding blasting adjacent to pipelines is also included in the Spectra Energy blasting criteria.

6.5.3 Blasting on Pipeline Right-of-Way

Blasting should not be allowed on the pipeline right-of-way except when conducted for the benefit of the Company and under the supervision of a Company representative or qualified Blasting Inspector familiar with the Company's blasting requirements.

6.5.4 Minimum Offset From Blast Holes to Pipeline

No blast holes should be loaded at an offset of less than 25 feet from the centerline of an in-service pipeline except in cases where precise measurements are taken to ensure that the pipeline will have at least one foot of clearance from the theoretical area surrounding the blast hole in which the ground could be permanently deformed by the blast under worst case conditions. This theoretical area is a conical shape originating at the bottom of the blast hole and extending out at an angle up to the ground surface.

When blast holes are angled from the vertical, this can have the effect of directing the disruption from the blast in one direction (the surface acts as a free face, allowing movement in that direction). For this reason, blast holes within 25 feet of an existing pipeline must be drilled vertically or angled away from the pipeline as the hole gets deeper.

In all cases, the absolute minimum horizontal offset from the blast hole to the side of the pipe is 12 feet.

Spectra Energy Partners

APPENDIX A

SHALLOW BEDROCK LOCATIONS ALONG THE AIM PIPELINE FACILITIES

Areas With Bedrock Less than 60 inches Below Grade by MP							
Bedrock Contact Type	**Overburden Material**	**Range of Slope (%) a/**	**Soil Map Unit**	**Beginning Milepost**	**Ending Milepost**	**Approximate Crossing Length (ft) b/**	**Depth - Bedrock (inches) g/**
NEW YORK							
Haverstraw to Stony Point Take-up and Relay							
Lithic	Till	15-30	CkD	1.19	1.49	1597.81	0
Lithic	Till	15-25	CoD	1.49	1.57	423.35	20
Stony Point to Yorktown Take-up and Relay							
Lithic	Till	15-25	CoD	0.31	0.36	279.84	0
Lithic	Till	15-25	CkD	0.36	0.41	269.28	0
Lithic	Till	8-15	CkC	0.41	0.51	522.72	0
Lithic	Till	15-25	CkD	0.72	1.29	3041.28	0
Lithic	Till	25-45	HIF	1.29	1.36	359.04	20
Lithic	Till	15-25	CkD	1.36	2.12	3970.56	0
Lithic	Till	15-25	CkD	2.79	3.14	1832.16	0
Lithic	-	0-45	Pv	4.06	4.13	390.72	0
Lithic	-	0-45	Pv	4.17	4.47	1610.40	0
Lithic	Till	15-25	CuD	4.87	4.92	279.84	20
Lithic	Till	15-25	CuD	5.44	5.52	464.64	20
Lithic	Till	15-25	CuD	5.64	5.65	89.76	20
Lithic	Till	15-25	CuD	5.98	5.98	10.56	20
Lithic	Till	8-15	CtC	6.32	6.41	469.92	0
Lithic	Till	15-25	CuD	6.41	6.48	327.36	20
Lithic	Till	15-25	CuD	6.50	6.56	332.64	20
Lithic	Till	15-25	CuD	6.72	6.74	142.56	20
Lithic	Till	15-25	CuD	6.79	6.82	153.12	20
Lithic	Till	15-25	CuD	6.99	7.01	84.48	20
Lithic	Till	8-15	CtC	7.01	7.10	448.80	20
Lithic	Till	15-25	CuD	7.10	7.31	1135.20	20
Lithic	Till	8-15	CtC	7.31	7.35	221.76	20
Lithic	Till	15-25	CuD	7.49	7.53	211.20	20
Lithic	Till	8-15	CtC	7.56	7.65	443.52	20
Lithic	Till	15-25	CuD	8.05	8.12	374.88	20
Lithic	Till	8-15	CtC	8.12	8.13	36.96	20
Lithic	Till	8-15	CtC	8.38	8.43	258.72	20
Southeast to MLV 19 Take-Up & Relay							
Lithic	Till	8-15	SgC	0.00	0.02	124.71	0

Areas With Bedrock Less than 60 inches Below Grade by MP							
Bedrock Contact Type	Overburden Material	Range of Slope (%) a/	Soil Map Unit	Beginning Milepost	Ending Milepost	Approximate Crossing Length (ft) b/	Depth - Bedrock (inches) g/
CONNECTICUT							
Southeast to MLV 19 Take-Up & Relay							
Lithic	Ablation till	15-45	73E	0.34	0.36	98.59	24
Lithic	Ablation till	15-25	73E	0.38	0.41	187.92	24
Lithic	Ablation till	15-25	73E	2.01	2.04	147.56	24
Lithic	Ablation till	15-45	73E	2.10	2.20	493.86	24
Lithic	Ablation till	15-45	73E	2.23	2.27	240.41	24
Lithic	Till	15-45	60D	2.31	2.38	358.28	20
Lithic	Till	15-45	60D	2.96	3.00	208.58	20
Lithic	Ablation till	15-45	75E	3.76	3.81	260.95	0
Lithic	Ablation till	15-45	73E	4.27	4.30	199.72	24
E-1 System Lateral Take-up & Relay							
Lithic	Ablation till	15-45	73E	0.47	0.51	237.36	24
Lithic	Till	15-25	60D	1.12	1.25	674.62	20
Lithic	Ablation till	15-45	75E	5.04	5.25	1,115.62	0
Lithic	Till	15-25	60D	5.77	5.78	58.57	20
Lithic	Ablation till	3-15	75C	6.20	6.21	72.84	15
Lithic	Ablation till	15-45	75E	6.21	6.33	604.85	0
Lithic	Ablation till	3-15	75C	6.33	6.40	369.84	15
Lithic	Ablation till	15-45	75E	6.40	6.43	148.77	0
Lithic	Ablation till	3-15	75C	6.43	6.48	266.02	15
Lithic	Ablation till	15-45	75E	6.48	6.57	468.02	0
Lithic	Ablation till	3-15	75C	6.57	6.59	139.14	15
Lithic	Ablation till	15-45	75E	6.59	6.66	384.06	0
Lithic	Ablation till	15-45	73E	6.82	6.86	242.16	24
Lithic	Ablation till	15-45	73E	6.92	6.95	134.46	24
Lithic	Ablation till	15-45	73E	6.98	7.06	405.85	24
Lithic	Ablation till	15-45	75E	8.12	8.17	303.27	0
Lithic	Ablation till	15-45	73E	8.23	8.27	221.70	24
Lithic	Ablation till	3-15	75C	8.27	8.28	39.24	15
Lithic	Ablation till	15-45	73E	8.52	8.55	180.29	24

Areas With Bedrock Less than 60 inches Below Grade by MP							
Bedrock Contact Type	**Overburden Material**	**Range of Slope (%) a/**	**Soil Map Unit**	**Beginning Milepost**	**Ending Milepost**	**Approximate Crossing Length (ft) b/**	**Depth - Bedrock (inches) g/**
E-1 System Loop							
Lithic	Ablation Till	15-45	75E	0.61	0.70	475.20	0
Lithic	Ablation Till	15-45	73E	0.70	0.77	332.64	24
Lithic	Ablation Till	15-45	75E	0.81	0.84	147.84	0
Lithic	Ablation Till	3-15	75C	0.84	0.88	211.2	15
Lithic	Ablation Till	15-45	75E	0.88	0.99	601.92	0
Lithic	Ablation Till	3-15	75C	0.99	1.03	195.36	15
Lithic	Ablation Till	15-45	75E	1.03	1.06	163.68	0
Lithic	Ablation Till	3-15	75C	1.06	1.17	570.24	15
Lithic	Ablation Till	3-15	75C	1.19	1.24	285.12	15
Lithic	Ablation Till	15-45	75E	1.24	1.31	380.16	0
MASSACHUSETTS							
West Roxbury Pipeline Lateral							
Lithic	Ablation till	3-15	104C	3.84	4.24	2,120.64	20
Lithic	-	0-45	601	4.24	4.27	119.37	0
Lithic	Ablation till	3-15	104C	4.27	4.37	549.20	20
Lithic	-	0-45	601	4.37	4.40	180.82	0
Lithic	Ablation till	3-15	104C	4.40	4.49	442.32	20
Lithic	Ablation till	3-15	630C	4.49	4.73	1,268.16	20
Lithic	Ablation till	3-15	104C	4.73	4.98	1,351.51	20
Lithic	Ablation till	3-15	630C	4.98	5.06	389.26	20

a/ For soil map units including areas of Udorthents and Urban Land, NRCS data did not specify a slope range. A slope range of 0 to 8 % was assigned to these developed areas.

b/ Soil crossing lengths were simplified by rounding to the nearest whole number. The crossing lengths may differ slightly from actual lengths due to rounding. No soil data is provided between MP 2.62 and MP 4.94 as the route across the Hudson River has not been determined at this time.

c/ Water erosion potential was determined by averaging the K factor values of horizons of each soil type. Based on the average K factor, each soil type was grouped into a water erosion class of "Low", "Moderate", and "High". Refer to Section 7.3.1.1.

d/ WEGs were obtained from the NRCS Soil Data Mart. WEGs range from one to eight, with one being the highest potential for wind erosion, and eight the lowest. Refer to Section 7.3.1.2.

e/ "Urban Land" and "Udorthents" map units do not have a NRCS designated hydric soil status. These map units were considered to be non-hydric soils. Map units comprised of complexes of hydric and non-hydric soil types were considered to be partially hydric.

f/ Compaction potential was determined by drainage class. High compaction potential includes very poorly drained and poorly drained soils, moderate compaction potential includes somewhat poorly drained to moderately well drained soils, and low compaction potential includes well drained soils.

g/ Depth to bedrock is not defined by the NRCS for the "Pavement and Buildings" map unit. A depth to bedrock of >60" was assigned, which is consistent with NRCS designations for other natural and fill soils in the AIM Project area.

h/ The ability of soils within the AIM Project area to support successful revegetation were determined by evaluating range of slope, erosion potential, drainage class, and presence of fill materials. Refer to Section 7.3.5.

i/ Drainage class abbreviations are as follows: VPD, very poorly drained; PD, poorly drained; MWD, moderately well drained; WD, well drained; ED, excessively drained.

APPENDIX F

PUBLIC ROADS AND RAILROADS CROSSING TABLE

APPENDIX F

TABLE F-1

Public Roads and Railroads Crossed by the AIM Project

Facility, County, State, Milepost	Roadway	Road Surface	Municipality	Proposed Construction Method
Haverstraw to Stony Point Take-up and Relay				
Rockland County, NY				
0.3	Call Hollow Road	Paved	Haverstraw	Open cut
0.5	Wolf Road	Paved	Haverstraw	Open cut
1.0	Call Hollow Road	Paved	Haverstraw	Open cut
1.2	Willow Grove Road	Paved	Stony Point	Open cut
1.5	Irish Mountain Court	Paved	Stony Point	Open cut
2.2	Palisades Interstate Parkway (inbound and outbound)	Paved	Stony Point	Bore
2.3	Pierce Drive	Paved	Stony Point	Open cut
2.4	Zachary Taylor Street/Pierce Drive intersection	Paved	Stony Point	Open cut
2.5	Pyngyp Road	Paved	Stony Point	Open cut
3.0	Gate Hill Road (Highway 210)	Paved	Stony Point	Open cut
3.0	Cedar Flats Road	Paved	Stony Point	Open cut
Stony Point to Yorktown Take-up and Relay				
Rockland County, NY				
0.4	Bulson Town Road (Route 65)	Paved	Stony Point	Open cut
0.7	Franck Road	Paved	Stony Point	Open cut
1.4	Soluri Lane	Paved	Stony Point	Open cut
1.6	Soluri Lane	Paved	Stony Point	Open cut
2.1	Route 53/Buck Berg Mountain Road	Paved	Stony Point	Open cut
2.4	Mott Farm Road (Route 118)	Paved	Stony Point	Open cut
3.0	Highway 9W (N. Liberty Drive)	Paved	Stony Point	Open cut
3.0	West Shore Drive	Paved	Stony Point	Open cut
3.1	Railroad	Railroad	Stony Point	Bore
Westchester County, NY				
3.9	9th Street	Paved	Cortlandt	Open cut
4.5	Lafarge Entrance Road	Paved	Cortlandt	Open cut
4.8	Broadway Street	Paved	Cortlandt	Bore
5.5	Bleakley Avenue	Paved	Cortlandt	Open cut
5.7	Metro North Railroad	Railroad	Cortlandt	Bore
5.8	Route 9A	Paved	Cortlandt	Open cut
5.8	Beloch Avenue (entrance extension to Route 9 from Route 9A)	Paved	Cortlandt	Bore
5.8	Briarcliff Peekskill Parkway (Route 9) (inbound and outbound)	Paved	Cortlandt	Bore
5.9	Reynolds Hills	Paved	Cortlandt	Bore
6.3	Pine Lane	Paved	Cortlandt	Open cut
6.4	Boulder Drive	Paved	Cortlandt	Open cut
6.7	Washington Street	Paved	Cortlandt	Open cut
8.4	Montrose Station Road	Paved	Cortlandt	Open cut
8.4	Maple Avenue	Paved	Cortlandt	Open cut
9.1	Benjamin Lane	Paved	Cortlandt	Open cut
9.2	Dimond Avenue	Paved	Cortlandt	Open cut

TABLE F-1 (cont'd)

Public Roads and Railroads Crossed by the AIM Project

Facility, County, State, Milepost	Roadway	Road Surface	Municipality	Proposed Construction Method
9.4	Cordwood Road	Paved	Cortlandt	Open cut
9.6	Forest Avenue	Paved	Cortlandt	Open cut
9.8	Rick Lane	Paved	Cortlandt	Open cut
10.0	Justin Court	Paved	Cortlandt	Open cut
10.2	Peachtree Drive	Paved	Cortlandt	Open cut
10.3	Croton Avenue	Paved	Cortlandt	Open cut
10.5	Crompond Road (Route 35 & 202)	Paved	Cortlandt	Bore
10.7	Baron De Hirsh Road	Paved	Cortlandt	Open cut
11.0	Lexington Avenue	Paved	Cortlandt	Open cut
Southeast to MLV-19 Take-up and Relay				
Fairfield County, CT				
0.3	Sawmill Road	Paved	Danbury	Open cut
0.4	Reserve Road	Paved	Danbury	Open cut
0.6	Matrix Corp. Road	Paved	Danbury	Open cut
0.9	Reserve Road	Paved	Danbury	Open cut
1.2	Union Carbide Road	Paved	Danbury	Open cut
1.3	Service Road	Paved	Danbury	Open cut
1.5	Old Ridgebury Road (Overpass)	Paved	Danbury	HDD inclusive
1.6	Interstate 84 (2A-2B) inbound and outbound	Paved	Danbury	HDD inclusive
1.8	Housatonic Railroad	Railroad	Danbury	HDD inclusive
2.0	Mill Plain Road (Route 202 & 6)	Paved	Danbury	HDD inclusive
2.4	Driftway Road	Paved	Danbury	Open cut
2.8	University Boulevard	Paved	Danbury	Open cut
3.2	Chelsea Drive	Paved	Danbury	Open cut
3.4	Middle River Road/Filmore Avenue/ Westville Road intersection	Paved	Danbury	Open cut
3.5	Topfield Road	Paved	Danbury	Open cut
3.9	Franklin Street Extension	Paved	Danbury	Open cut
4.2	Kohanza Street	Paved	Danbury	Open cut
4.3	Overlook Terrace	Paved	Danbury	Open cut
4.4	Clapboard Ridge Road (Route 39)	Paved	Danbury	Open cut
E-1 System Lateral Take-up and Relay				
New London County, CT				
0.9	Chappell Road	Paved	Lebanon	Open cut
1.9	Exeter Road (Route 207)	Paved	Lebanon	Bore
5.8	Railroad	Railroad	Franklin	Bore
6.0	Meeting House Hill Road	Paved	Franklin	Bore
7.4	Windham Turnpike (Route 32)	Paved	Franklin	Bore
8.5	Wisconsin Avenue	Paved	Norwich	Open cut
Line-36A Loop Extension				
Middlesex County, CT				
1.2	Maine Street (State Route 99)	Paved	Cromwell	Open cut

TABLE F-1 (cont'd)

Public Roads and Railroads Crossed by the AIM Project

Facility, County, State, Milepost	Roadway	Road Surface	Municipality	Proposed Construction Method
E-1 System Lateral Loop Extension				
New London County, CT				
0.0	Fitch Hill Road	Paved	Montville	Open cut
West Roxbury Lateral [a]				
Norfolk County, MA				
0.1	East Street	Paved	Dedham	Bore
0.4	Route 1 & Interstate 95/Route 128 (inbound and outbound)	Paved	Dedham	Bore
0.5	Allied Drive (and through large parking lot)	Paved	Dedham	Open cut
0.6	Railroad	Railroad	Dedham	Bore
0.6–1.2	In and along Rustcraft Road/Elm Street	Paved	Dedham	In-road
0.9	Robinwood Road (along Elm Street)	Paved	Dedham	In-road
1.0	Robinwood Road (along Elm Street)	Paved	Dedham	In-road
1.0	Fox Drive (along Elm Street)	Paved	Dedham	In-road
1.2–2.4	In Providence Highway	Paved	Dedham	In-road
2.3	Eastern Avenue (along Providence Highway)	Paved	Dedham	In-road
2.5	Harris Street/High Street	Paved	Dedham	Open cut
2.6–3.0	In and along East Street	Paved	Dedham	In-road
3.1–3.4	In and along Washington Street	Paved	Dedham	In-road
3.2	Curve Street (along Washington Street)	Paved	Dedham	In-road
3.2	Columbia Terrace (along Washington Street)	Paved	Dedham	In-road
3.4	Oak Street	Paved	Dedham	In-road
Suffolk County, MA				
3.4–3.8	In and along Washington Street	Paved	West Roxbury, Boston	In-road
3.5	Meshaka Street (along Washington Street)	Paved	West Roxbury, Boston	In-road
3.5	Rockland Street (along Washington Street)	Paved	West Roxbury, Boston	In-road
3.7	Stimson Street (along Washington Street)	Paved	West Roxbury, Boston	In-road
3.8–4.4	In and along Grove Street	Paved	West Roxbury, Boston	In-road
3.9	Freeman Avenue (along Grove Street)	Paved	West Roxbury, Boston	In-road
4.0	Birch Road (along Grove Street)	Paved	West Roxbury, Boston	In-road
4.0	Altair Road (along Grove Street)	Paved	West Roxbury, Boston	In-road
4.2	Grove Terrace (along Grove Street)	Paved	West Roxbury, Boston	In-road
4.4–5.1	In and along Centre Street	Paved	West Roxbury, Boston	In-road
4.5	Glenhaven Road (along Centre Street)	Paved	West Roxbury, Boston	In-road
4.6	Baker Street/Centre Lane (along Centre Street)	Paved	West Roxbury, Boston	In-road
4.6	Wedgemere Road (along Centre Street)	Paved	West Roxbury, Boston	In-road
4.7	Woodbrier Road (along Centre Street)	Paved	West Roxbury, Boston	In-road
4.7	Centre Terrace (along Centre Street)	Paved	West Roxbury, Boston	In-road
4.9	Bogandale Road (along Centre Street)	Paved	West Roxbury, Boston	In-road
5.1	Spring Street	Paved	West Roxbury, Boston	In-road

[a] The majority of the West Roxbury Lateral would be co-located along Providence Highway, Washington Street, Grove Street, Centre Street, and East Street.